

# COMPUTERWORLD

\$2/COPY; \$44/YEAR

DECEMBER 15, 1986

VOL. XX, NO. 50

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## Stock-watch tools lag behind crooked traders

By Charles Babcock and Mitch Betts

Despite large investments in sophisticated "stock-watch" software, the major stock exchanges and the Securities and Exchange Commission still face slim prospects of detecting an Ivan Boesky-type trader, according to spokesmen for the exchanges and critics of the SEC.

The stock-watch programs, implemented in their latest versions in the early 1980s, have been frequently cited by the American and New York stock exchanges as the first line of defense against insider trading.

When practiced on the scale of the Boesky case that has rocked Wall Street, insider trading is frequently either not detectable by the software or not provable in a follow-up investigation, the experts said.

Insiders make illegal profits by acting on information that indicates a stock's price

is about to rise or fall before that information is available to other traders or the public. Boesky, one of the largest arbitrageurs or speculators in the stock of takeover targets on Wall Street, confessed to receiving information from



Ivan Boesky

Dennis Levine while Levine was serving in the confidential position of a banker financing takeover deals at Drexel Burnham Lambert, Inc.

During a congressional hearing in Washington, D.C., last week, Rep. John D. Dingell (D-Mich.) charged that the exchanges' stock-watch systems were "impotent in making a case against major institutional inside traders." A subcommittee of Dingell's Energy and Commerce Committee oversees the SEC and questioned exchange officials about the effectiveness of the surveillance programs.

"I don't think it's a computer problem; I think it's a gumshoe problem," said

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## Tax reform dooms DP free-lancers

### Revision linked to service firm lobby

By David A. Ludlum

A clause quietly slipped into the Tax Reform Act of 1986 will eliminate the independent status of many freelance computer programmers, analysts and consultants and is creating "havoc and dissent" among those individuals.

The section will force many free-lancers to become employees of organizations where they work or of the firms that place them. That will require the employer to withhold taxes from the workers' pay and will eliminate tax deductions for business expenses that the free-lancers have enjoyed under existing provisions.

Congressional aides are attempting to clarify who will be affected by the clause, Section 1706 of the tax act, before it takes effect Jan. 1.

It was prompted by lobbying from "technical service firms" that approached the U.S. Congress's Joint Com-

mittee on Taxation about what they claimed was unfair competition from other companies, according to Joseph Gale, tax counsel for Sen. Daniel Patrick Moynihan (D-N.Y.), who sponsored the provision.

"It was a question of equalizing the tax treatment for firms engaged essentially in the same business," Gale said.

The section will remove a so-called safe harbor provision that has protected technical contract workers from being classified as employees.

It will subject the workers to the common law principles the Internal Revenue Service and Social Security Administration use to determine employee status.

Section 1706 applies to computer programmers and systems analysts along with engineers, designers and drafters and any other "similarly skilled worker engaged in a similar line of work."

"It's causing complete havoc and turmoil and dissent," said one computer pro-

See **REFORM** page 10

## DG fills in mid-range with eye on competition

By Alan Alper

**NEW YORK** — Focusing on claimed price advantages, Data General Corp. last week introduced a series of general-purpose 32-bit processors that plug a perceived performance gap in the mid-range of its MV family.

With the MV/15000, which DG said is already shipping, the Westboro, Mass., firm is attempting to fend off performance gains

See **DG** page 6

## Laptop on back burner at Compaq

### Claims keys and screens limit use

By Douglas Barney

**HOUSTON** — Despite a growing laptop computer market, Compaq Computer Corp. will stay out of that arena in the near future and await technological and market advances.

Although Compaq has developed several laptop prototypes, the company believes the limitations of screen quality, keyboard size and expansion capabilities hinder acceptance of the devices, Compaq official Jeff Stives said last week.

"Through the third calendar quarter, laptops are 2% of the total microcomputer market, both in dollars and in units," said Ron Rehling, vice-president of the computer market division for IMS America Ltd., the Ambler, Pa.-based producer of the "National Computer Retail

Report." So far, laptops have sold most strongly in vertical markets where there is a demonstrated need for on-the-road computing.

One user agreed that the technology still has a long way to go. "It is very difficult to have a full-size key-

boards. They were looking for something that was a little lighter, a little less bulky."

The emergence of two sizes of floppy disk drives on laptops also poses a problem for users. "Unless we can get a major move to standardize on one or another, people are just not going to convert to 3½-inch," Allman asserted.

Until these hurdles are overcome, Compaq will stay out of the market. "Compaq is not about to introduce a laptop. It isn't in the product plans. Prototypes, yes. Product plans, no," Stives said. According to Stives, Compaq has shown a prototype to outsiders only at the firm's Houston headquarters.

The issue for Compaq is simple, Stives maintained. "The constraints are the same as they have always been. For one, there is no broad market," Stives said.

Stives also listed a slew of shortcomings in existing lap-

See **COMPAQ** page 8

## NEWS

# Capacity planners look for benefits of expert systems

By James Connolly

**LAS VEGAS** — Expert systems have the potential to ease capacity planning tasks, but those tools are neither ready nor close to availability, according to capacity planners and performance measurement specialists meeting here last week.

Attendees at Computer Measurement Group, Inc.'s (CMG) annual international conference said they have been waiting for several years for vendors and university researchers to develop expert systems for capacity planning but that those systems are still several years away.

"I've found quite a little bit of interest in expert systems, which I think have a lot of potential to help," said Paul Larkin, mainframe performance analyst for Shell Company of Australia Ltd. in Melbourne. When asked whether he sees any applicable expert systems being delivered soon, he said, "No, but the fact that IBM is coming out with a general-purpose expert system could make it so that other people will be able to build systems for capacity planning and performance measurement."

Another manager who expressed disappointment with the progress in expert systems development was Jerome P. Wood, manager of resource management for DST Systems, Inc., a Kansas City, Mo.-based financial records firm. "It seems that in the last year or so they have started talking about expert systems. But I have heard some fairly important people kind of pooh-poo it, saying the technology just isn't ready yet for everyday use in a production environment," Wood noted.

Another manager, who asked not to be identified, said he is considering developing other advanced tools rather than waiting for an expert system to help him identify system performance bottlenecks and the need for system expansion.

## Necessary rules missing

A speaker who addressed the convention on expert systems noted that true expert systems, able to help capacity planners on a daily basis, are still about two years away. "The technology is there now to make a totally comprehensive system. The problem is that it will take 30 man-years to develop the necessary rules," said Sam Biardo, an instructor at the Illinois Institute of Technology in Glen Ellyn, Ill.

In addition to expert systems, attendees concentrated on fine-tuning performance measurement and managing capacity planning groups in a corporate environment. Attendees surveyed at CMG's International Conference on Management and Performance Evaluation of Computer Systems were divided when asked whether their organizations are committed to capacity planning.

"I think a lot of people don't take it seriously enough, but that depends on your size and the amount of money you have to spend," said Thomas L. Butler, technical systems design analyst for the Federal Reserve Bank of Minneapolis. Butler, who recently moved into his position, noted that there are increasingly few organizations able to afford to do without ca-

capacity planning groups.

Urging capacity planners to produce layered management reports — with less detailed reports being sent to higher ranking executives — Elizabeth Yen, manager of capacity and performance management for Empire Blue Cross in New York, told attendees, "If you are giving them 64 pages, they will tell you not to bother. They won't read it. They don't understand it."

Yen also said a capacity performance management group should be able to anticipate problem areas so that the role is "preventive, not firefighting."

## Product announcements

Product introductions at the conference included Candle Corp.'s announcement of Omegamon/VM, XA/SF Version 300, which allows its Omegamon software to monitor IBM VM/XA/SF. Due to be available this week, the product is a new release of Omegamon.

Candle also announced that it is beta-testing a background reporting product for IBM's CICS. Scheduled to be available in the spring, it is an add-on product for Candle's Omegamon/CICS and costs \$6,000 for IBM MVS and \$2,000 for IBM DOS.

One company that offers an expert system for capacity management, International Systems Services Corp. (ISS), announced an integrated network modeling capacity for its year-old ISS Three package. It will be provided at no charge to existing customers in a controlled release in first-quarter 1987 and will be generally available in the second quarter.

The network facility sits on the personal computer module of ISS Three. That personal computer module costs \$18,000, while the mainframe-based MVS portion costs \$10,500.

BSG Systems, Inc. announced a CICS feature for its Best/1 analysis package, reportedly allowing characterization of CICS work loads by transaction identification, terminal identification and resource consumption. The product is also said to isolate specific applications for examination of how they relate to business functions and to provide "what-if" analyses of those work loads.

BSG Systems also announced an IBM Systems Network Architecture (SNA) modeling tool that monitors activity between SNA points. Targeted at large networks, it costs \$50,000 and will be available in January. BSG Systems also said it has developed a prototype VM Planner that allows modeling of applications like IBM's Professional Office System to determine, for example, how additional users would impact response times. No price has been set for the product, which will be available in early 1987.

Morino Associates, Inc. announced that its MICS CICS Component now supports transaction and checkpoint system data from Landmark Systems Corp.'s The Monitor for CICS. That interface will be included in the MICS CICS upgrade scheduled to be shipped in January, according to Morino officials. MICS CICS Component costs \$4,500 for the initial year and \$1,500 for the next year.

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## NEWS

# Performance ills push back Dbase Mac intro

## Ashton-Tate targets second-quarter ship

By Douglas Barney

TORRANCE, Calif. — Ashton-Tate will not ship Dbase Mac, its data base product for Apple Computer, Inc.'s Macintosh, until the second quarter of 1987.

The product, originally set to ship by the end of this year, is delayed because of performance problems, according to a letter sent to Ashton-Tate dealers from company President Luther Nussbaum and affirmed by company Chairman and Chief Executive Officer Edward M. Esber Jr. last week.

"It is not a bug; we are just not happy with the performance," Esber said at a First Boston Corp. high-technology conference.

"We are not providing details on what issues are not meeting the competitive performance targets we have set. Our judgment is that the sum total of the product does not meet those targets," said Lydia Dobyns, acting

vice-president of marketing for the Software Products Division of Ashton-Tate.

According to Keith Thompson, publisher of "New View," a Lexington, Mass.-based Dbase Mac newsletter, the key problem is in the speed of the program's Browse, or columnar view, feature. This feature allows the user to browse through a data file to find a particular entry or just scan a list of records.

### 'Unacceptably slow'

"There are some areas in the program that are still not fast, unacceptably slow," Thompson said. "In the column mode, depending on the size of the file, there could be several seconds before the entire screen is written to. If you have a very large record, it takes longer than it should to write a record to a line."

Ashton-Tate has already taken steps to solve that problem, Thompson reported. "They have worked on that particular speed question, and it has gotten much better. We got a version in the mail today, and it is going faster. It could be faster," he added.

Bugs in the software, a common if not standard feature of prerelease software, is not a major cause of the Dbase Mac delay, Thompson said. "The bug list is way down on this product. We can use it fairly comfortably without any major things happening," he said. "They are resolving 20 and 30 and 40 bug reports at a time. They have really made great progress in getting the thing debugged."

Thompson said he believes that Ashton-Tate announced the program in advance to create demand and to interest the data base development community in the product. "They wanted to preannounce the product in order to begin to bring the developers along. That might have been a little premature," Thompson said.

Ashton-Tate has taken orders for the product from distributors and dealers, and officials said they do not believe those orders are jeopardized by the shipping delay. "Most customers have indicated that they would rather have us deliver a product that is right than rush to market," Dobyns said.

# Lotus graphics programs found unbootable

By Douglas Barney

CAMBRIDGE, Mass. — Some users of Lotus Development Corp.'s Freelance Plus graphics program have recently encountered an annoying problem: The program simply will not boot.

According to Dave Tarrant, manager of Lotus's graphics product group, the problem is the result of a manufacturing error and not a bug in the program.

"We have a master set of disks, which are the gold disks, and then from those they make several sets of silver disks. Silvers each can be used on a duplicating machine to make multiple sets. Apparently, one of the sets of silvers had one bad disk," Tarrant explained.

### About 200 problem packages

According to a Lotus spokesman, approximately 200 problem packages have so far been brought to the firm's attention. Lotus discovered the cause

of the problem early last week.

Lotus is still unaware of how many packages have the problem. "We don't know exactly the number, but we are estimating that it is less than 10%, but it does number in the several hundred category potentially," Tarrant said. "I would guess that 1,000 is probably the maximum, but that would assume that silver had more than its share of copies made off of it."

Users with the problem disk are simply unable to work the program, even when using the correct procedures for loading and personalizing the program. "When you start up and try to register it, the program does not recognize the disk... It tells the user to put the correct disk in," Tarrant said.

Most users will not encounter the problem.

"Anybody who is running the product has no problem. If they have got a bad disk, they will know immediately.

It is not like it is lurking out there to cause trouble for someone who is already running and is worried whether they have a good or a bad disk," Tarrant said.

### Free replacements

Lotus will replace the defective disks free of charge and can be contacted directly.

"We are going to make up copies of the corrected disk and put them in the hands of the channel. Distributors and dealers can actually have those copies and take care of a customer immediately if there is a problem," Tarrant said.

The corrected disks were scheduled to go out last week, according to Lotus.

Because of the nature of the problem, there is essentially no time limit on replacing the defective disks. "It is the kind of thing where if anybody bumped into it at any time, we can handle that," Tarrant said.

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Computerworld is a member of the CW Communications Inc. group, the world's largest publisher of computer-related information. The group publishes over 70 computer publications in more than 28 major countries. Twelve million people read one or more of the group's publications each month. Members of the CW group contribute to the CW International News Service offering the latest on domestic and international computer news. Members of the group include: ARGENTINA'S Computerworld/Argentina, PC Mundo; ASIA'S Asian Computerworld, Communications World; AUSTRALIA'S Computerworld Australia, Communications World; AUSTRIA'S Computerworld Österreich; BRAZIL'S DataNews, PC Mundo; CHILE'S Informatica, Computacion Personal; DENMARK'S Computerworld Denmark, PC World Denmark, RUN, FINLAND'S Tietoliiketo, Mikro; FRANCE'S Le Monde Informatique, Distributive, Golden, InfoPC, Theorem; GREECE'S Micro and Computer Age; HUNGARY'S SZT Computerworld, Mikrolog; INDIA'S Dataquest; ISRAEL'S People & Computers Monthly, People & Computers Weekly; ITALY'S Computerworld Italia, PC World Magazine; JAPAN'S Computerworld Japan; MEXICO'S Computerworld Mexico; THE NETHERLANDS' Computerworld Netherlands, PC World Netherlands; NEW ZEALAND'S Computerworld New Zealand; NORWAY'S PC Mikrodata, Computerworld Norge; POLAND'S REPUBLIC OF CHINA'S China Computerworld; SAUDI ARABIA'S Arabian Computer News; SOUTH KOREA'S The Electronic Times, SPAIN'S Computerworld Espana, Computacion Iberica; SWEDEN'S Computer Sweden, Mikrodata, Svenska PC World; SWITZERLAND'S Computerworld Schweiz; UNITED KINGDOM'S Computer News, DEC Today, ICL Today, PC Business World; UNITED STATES' America World, Boston Computer News, Computerworld, Digital News, 80 Micro, FOCUS Publications, Inquirer, InfoWorld, MacWorld, Micro Magazine, Network World, PC World, PublicWorld, VENEZUELA'S Computerworld Venezuela; WEST GERMANY'S Computerwoche, PC Welt, Computer Business, Run, InfoWelt.

## CORRECTIONS

The article, "Entrepreneurship seen key to blacks' advancement in DP" [CW, Oct. 6], should have identified Marvin Walker as a data base analyst.

Intel Corp.'s 80386 microprocessor was never meant to simultaneously run multiple 80286 and 80386 operating systems, as stated in "Intel backs off 80386 claims but denies chip recast needed" [CW, Dec. 1]. Instead, the chip has the ability to concurrently run applications from multiple 80286 and 80386 operating systems.

An article on Telex Computer Products [CW, Nov. 24] inadvertently referred to a low-end laser printer; the reference was in regard to an ink-jet printer included in the company's announcements.

Second-class postage paid at Frammingham, Mass., and additional mailing offices.

Computerworld (ISSN-0010-4841) is published weekly, except: January (5 issues), February (5 issues), March (6 issues), April (5 issues), May (5 issues), July (5 issues), August (5 issues), September (7 issues), October (5 issues), November (5 issues), December (5 issues) and a single combined issue for the last week in December and the first week in January by CW Communications/Inc., 375 Cochituate Road, Box 9171, Frammingham, Mass. 01701-9171.

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Computerworld can be purchased on 35 mm microfilm through University Microfilm Int. Periodical Entry Dept., 300 Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed: write to Circulation Dept. for subscription information.

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POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Circulation Department, P.O. Box 1016, South-eastern, PA 19398-9984.

## NEWS

# Move to EDI gathers steam as standards clear, benefits grow

## Show attracts buyers as industry gears up

By Elisabeth Horwitt

WASHINGTON, D.C. — An increasing flow of commercial products and breakthroughs in forming standards prompted an unprecedented turnout at the Electronic Data Interchange (EDI) conference last week.

Attendees indicated they were present not just to learn about EDI — the method by which business partners, often in different industries, perform electronic computer-to-computer exchange of business documents — but to buy products for use in their companies' EDI networks.

Sponsored by the Transportation Data Coordinating Committee (TDCC)/Electronic Data Interchange Association, the conference drew a mixed crowd of some 1,500 MIS and business managers, who filled the small exhibit floor and left only standing room at sessions that discussed EDI implementations and standards activities within specific industries.

### 'More smoke than fire'

Many businesses represented at the show are at the crucial stage of deciding whether EDI is worthwhile. "There is still a lot more smoke than fire," noted Andrew Yett, an associate at Lexington, Mass., management consulting firm Temple, Barker & Sloane, Inc. "The majority of EDI installations are still in the pilot stage." He added, however, that "many companies have incredible plans for EDI installations within the next two years."

Kenneth Fried, for example, was there to collect information for the National Soft Drink Association, whose members are discussing whether to join an already operational EDI network of supermarket chains and manufacturers. Electronically exchanging purchase orders and invoices "would eliminate sales calls and provide more efficient use of manpower," Fried said. "We're in the first stage of educating ourselves, after which we plan to do a feasibility study."

Robert Trees of Armstrong World Industries, Inc. came to the show to look at ways EDI can extend his company's closed-loop Materials Requirements Planning II system out to suppliers, with a just-in-time system as a possible long-range goal. "It is significant that I, a purchasing manager and not a DP manager, came to the conference," he noted.

Session speakers, many of whom were from companies with operational EDI networks, gave different versions of the same basic message: While implementing EDI was by no means inexpensive or easy, companies that begin now are likely to have a much easier time than pioneers that began even a year ago.

### Standards adoption

Recent developments have contributed to this trend, industry experts said. First, the maturation and widespread adoption of standards have made EDI viable and cost justifiable for an increasing number of companies and industries, industry representatives said. Du Pont Co.,

which started its EDI installation approximately two years ago, had to "do its own thing because standards were useless" at the time, noted Lee Foote, who co-developed the company's EDI network. "We have to deal with drugs, petroleum, coal, textiles industries, each of which uses different headers. It was a major sore point for us."

One promising development in this area is the proposed integration of the two major EDI standards, ANSI X.12 and the TDCC's.

At an EDI session for grocery manufacturers and distributors, attendees learned that industry representatives agreed in November on a common data dictionary for ANSI

X.12, the Warehouse Information Network Standards, the Uniform Communications Standard, which is used by the grocery industry, and the TDCC standard. "Prior to that, if you wanted to perform EDI with other industries, it was tough," said Ralph Hite of Ralph Grocery Co.

North American and European EDI protocols are also in the process of merging. This fall, North America's Joint EDI committee and European standards group Sitpro came up with recommendations for a universal EDI syntax, generic data elements and standardized formatting for specific types of business documents. Already under development are specifications for invoice documents.

Du Pont's Foote cited both personal computer software and third-party vendors as useful shortcuts to EDI. "We very, very strongly prefer going with a third party, since we have a quarter of a million active vendors and suppliers." Du Pont also has found that setting up EDI links with new partners "might take only a month if the partner goes the PC package route," which works well for small companies with low transaction volumes, he explained.

Foote warned attendees, however, that companies with large transaction volumes should stick with direct mainframe links. "Don't use a PC front end for your EDI system — it runs out of gas real fast," he said.

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## NEWS

# IBM eyes number-crunching market with new centers

## Abilities of 3090 spearhead move into science mart

By Donna Raimondi

IBM last week announced that it will strongly focus on scientific/engineering computing for large systems — a move that will take advantage of the current boom in the scientific processing marketplace and may lay the groundwork for combined commercial/scientific systems.

In an announcement last week, IBM said that the capabilities of its 3090 mainframe — which can do scalar, vector and parallel processing — led to the decision to significantly increase its technical and marketing support for numerically intensive computing.

While the implication is that the company is moving into traditional scientific/engineering marketplaces, this move actually foreshadows an emerging market of com-

bined commercial/scientific computing, according to analyst Thomas Henkel of The Yankee Group.

Dr. Irving Wladawsky-Berger was appointed vice-president for engineering/scientific computing at IBM's Data Systems Division, which develops and manufactures the 3090. The Information Systems Group will add two Numerically Intensive Computing Centers — in Palo Alto, Calif., and in Kingston, N.Y. — to explore technology related to scientific/engineering computing and develop additional applications in this field, often in conjunction with university researchers.

A competency center composed of a group of applications specialists and support personnel dedicated to numerically intensive computing will be based in Dallas.

IBM has traditionally avoided the scientific marketplace in favor of commercial processing, Henkel said. But the growing demand for simulation and applications like econometric modeling

plus the emergence of expert systems in the near future make scientific capabilities important to businesses that do not yet even realize the significance of these capabilities, he added. Large banks

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**This move foreshadows an emerging market of combined commercial/scientific computing.**

— Thomas Henkel  
The Yankee Group

and insurance companies have been buying the 3090 with additional vector processors, which they are "playing with" at this time, he said.

Henkel said he believes IBM has long-range plans to release a facility that will allow the company's vector processors to interact with its DB2 data base manage-

ment system. This would allow simulations in the vector processor to get variables from the DBMS, a feature that would be difficult for the traditional plug-compatible manufacturers or software vendors to duplicate.

There is nothing to stop IBM from adding other types of processors — such as symbolic or fault-tolerant units — as well, making systems that will perform everything from the typical payroll to simulations to artificial intelligence, he added.

Such a system is definitely in the not-too-near future, according to Henkel, and the IBM announcement focusing on scientific/engineering computing is just a laying of the groundwork. IBM has a serious strategic software development backlog, Henkel claimed, so it is unlikely that the full scope of the company's developments will appear for a number of years.

An immediate benefit of the scientific focus will be to nudge IBM into Digital Equipment Corp.'s traditionally strong arena, Henkel

said. "DEC's clustered VAX 8800s claim to be at least equal to a 3090, but if you are talking about one application, like a modeling program that needs lots of power, all the 8800s in the world won't help you," he said. The new emphasis should not hurt traditional supercomputer or minisupercomputer companies, as IBM will have to prove itself in this marketplace, he said.

In the Kingston Numerically Intensive Computing Center, IBM will work with several major software vendors such as MSC Schwendler Co. — developer of an enhanced version of the National Aeronautics and Space Administration's NASA Structural Analysis — and Swanson Associates — developer of the Ansys structural analysis program — to optimize their software for IBM's vector processors.

IBM will act as a systems integrator to bring together third-party hardware and software systems for scientific/engineering customers, a spokesman said.

## DG fills in its mid-range line

From page 1

made by chief rival Digital Equipment Corp. and prepare for the mid-range onslaught by IBM, whose new departmental processor, the 9370, will be generally available in the second half of 1987.

The three-member MV/15000 series essentially replaces the MV/8000 and the MV/10000, DG said. The processor series is based on the same single-board architecture as the year-old MV/20000 and uses transistor-transistor logic and CMOS semiconductor technology.

"The MV/15000 reinforces our position of the last four years as a price/performance leader," claimed Robert Miller, senior vice-president of DG's Information Systems Group.

### Ease of upgrading

Dave Lyons, vice-president of group marketing, pointed to the ease of upgrading from the low-end Model 8 through the Models 10 and 20 as a major attraction of the MV/15000. The swapping of computer boards can be accomplished in less than 20 minutes, he said, allowing users to migrate up the family's performance curve with minimal downtime.

Craig Symons, an analyst with the Gartner Group, Inc. in Stamford, Conn., said the ease of upgrading within the series is a major selling point of the architecture.

"It's very exciting for DG," he said. "They are the first major company to really deliver simple upgradability."

Among the initial customers to receive the MV/15000 were Texaco, Inc., Home Box Office & Co., a value-added reseller of turnkey systems to

the medical industry and World Computer Corp., an OEM that markets systems to the financial services industry.

"We're very impressed with the speed and the power of the system," noted David Selina, senior vice-president of marketing at World Computer. "We upgraded from a Model 8 to a Model 10 in less than 15 minutes and without any software modifications."

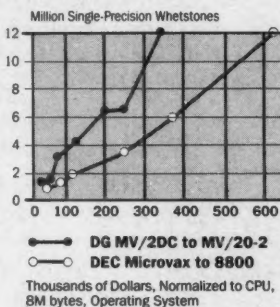
Operating under the AOS/VS operating system, the MV/15000 is targeted at a wide variety of applications, including office automation, distributed data processing, real-time processing, general technical computing, communications and network serving, DG said.

### AOS/DVS support

The systems will in the future support AOS/DVS, a distributed virtual memory version of AOS/VS, DG/UX — a standard implementation of

## Data General MV line

Price/performance claims vs. DEC



Unix — and AOS/RT32, the firm added.

Both CEO and TEO, DG's general business and integrated technical office automation software packages, respectively, run on the series.

Including AOS/VS, the MV/15000 lists for between \$57,200 and \$226,500, depending on memory configuration. For example, a Model 8 with 8M bytes of memory lists for \$62,500, a Model 10 with 16 bytes costs \$145,000 and an 8M-byte Model 20 is priced at \$204,500.

### Upgrade prices

Upgrading from a Model 8 to a Model 10 carries a cost of \$72,000; moving from a Model 10 to a Model 20 costs \$87,200; and upgrading from a Model 8 to a Model 20 would be priced at \$151,900.

The Model 8 performs at 2.9 million whetstones and supports up to 60 office automation users, the Model 20 operates at 4.3 million whetstones and supports up to 100 users and the

Model 20 runs at 6.4 million whetstones and supports up to 160 users, according to DG.

Using the whetstone measurement, the MV/15000 is up to 50% faster than a comparable DEC machine and is 37% less expensive, DG said. Using single-precision linpacks, the DG series is on average 12% faster and 29% less expensive than the IBM 9370 series, according to the firm.

### Base price comparison

Comparing the purchase price of a base system, which includes central processor, floating-point processor, 8M bytes of main memory and operating system, the Model 10 is priced at 40% less than the IBM 9377-90 and 44% less than the VAX 8500, DG said.

A floating-point processor is standard with the Model 20 and is offered as an option with the Models 8 and 10, DG said.

Memory for all three systems comes on 4M-, 8M-, 16M- and 32M-byte boards. The 16M- and 32M-byte boards feature DG's initial implementation of 1M-bit dynamic random-access memory, the firm noted.

DG pointed out that its 32M-byte maximum on the MV/15000 favorably compares with IBM's 9370, which features a 16M-byte main memory limit.

All MV/15000 models support a maximum of 28 592M-byte disk drives for a total of 16.6G bytes of on-line disk storage.

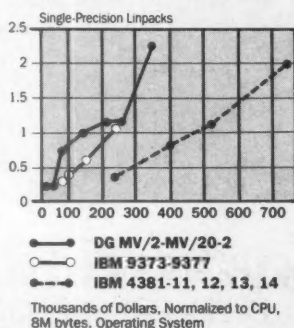
Each model is housed in a standard 10½-in. chassis. Up to two expansion chassis and associated cabling can be configured with a host unit.

DG is offering a trade-in and upgrade program for MV/4000, MV7800, MV/8000 and MV/10000 users, Lyons said.

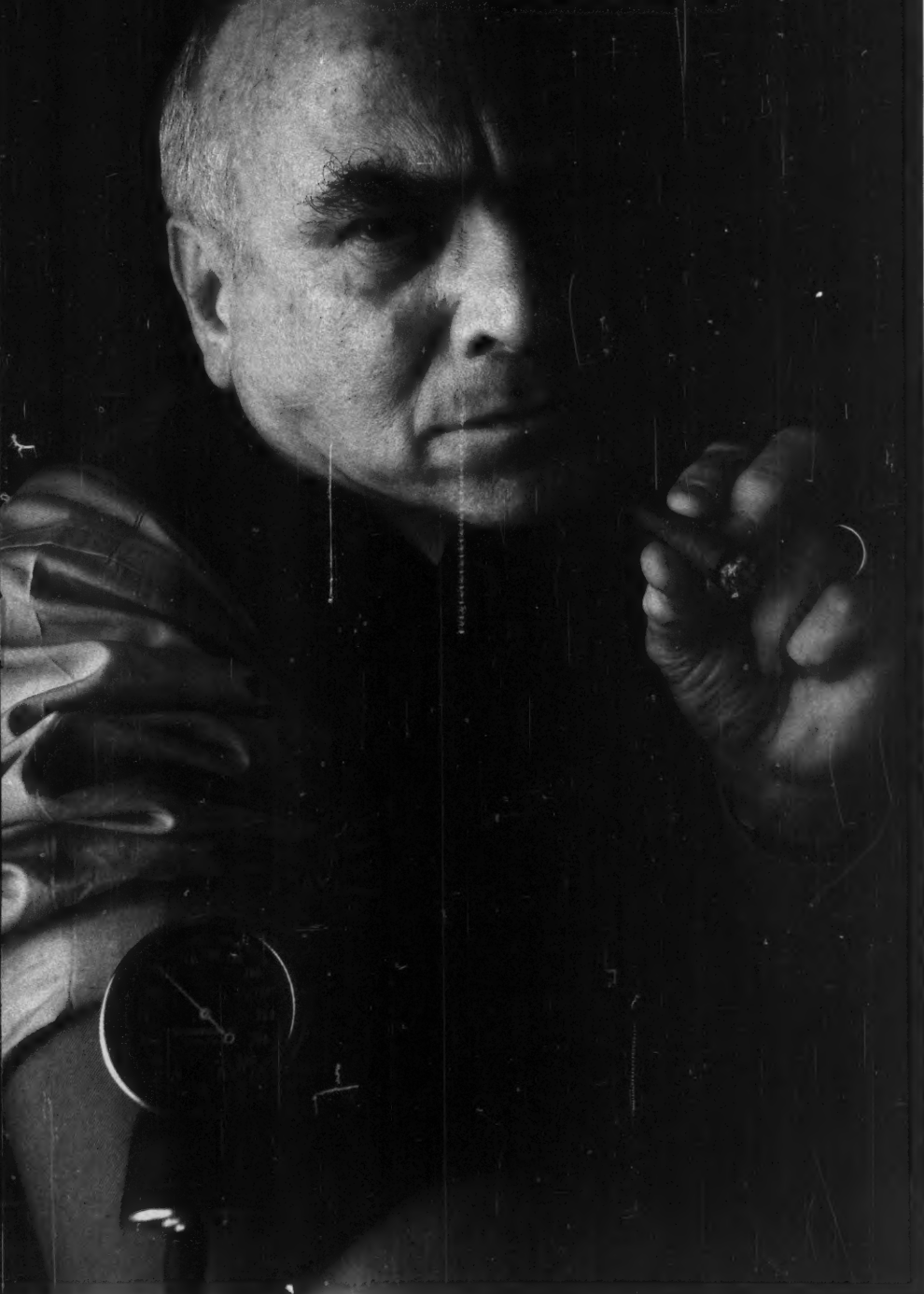
Prices vary with the type of equipment swapped, he added.

## Data General MV line

Price/performance claims vs. IBM



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## NEWS

## Portables' batteries explode

### Compaq warns service providers of problem

By Douglas Barney

HOUSTON — Compaq Computer Corp. recently issued a warning about a safety hazard, which includes the possibility of explosion, fire, gaseous emissions and bodily harm from improper servicing of some units of the Compaq Portable II computer.

The problem could affect as many as 8,000 out of 40,000 units that have shipped.

There have already been three instances of explosions of the lithium batteries used to power the machines' clock, all of which occurred after the unit was serviced. One such explosion occurred within Compaq itself. The two other instances occurred in user sites. None of the cases resulted in injury, and no lawsuits against the firm have been filed, according to Compaq spokesman Jeff Stives.

The problem occurs when a user, dealer or service technician gives the machine a visual inspection in an attempt to service the machine. Boards within the problem computers are supposed to have a three-pin connector, but one pin has been clipped. In some cases, the servicer thinks that by replacing that empty pin, the problem can be solved.

"Some technicians may incorrectly conclude that they need to replace the pin that Compaq cut on the early boards," a Dec. 1 bulletin read. "When the power is off, the battery then attempts to run the entire 5-volt system. Meanwhile, the CMOS receives no power at all. This creates rapid battery drain when power is removed from the unit, followed by a high-speed charge when power is applied to the unit, which leads invariably to an explosion in any lithium battery."

#### Free resolution

System boards with the marking PCB-000320-001 REV B, C or D may have the problem. Compaq will resolve the problem for free and can be contacted directly or through its dealer network.

In an attempt to avoid the potential hazard, Compaq has released a service bulletin to all its dealers warning them about the problem and offering steps to resolve it. Compaq is also making stickers available that warn service personnel not to modify the system board.

"What we want the user to do is if you have a Portable II and it has been serviced, bring it back. If you have a new one, put on the sticker," Stives said. "The service bulletin went to every Compaq dealer and every other person in our service data base, even if they weren't authorized to sell Compaq."

## Compaq laptop on back burner

From page 1

top technology. For example, flat panel display technology, although improving, is still not adequate. "You still need AC power for high quality. If you use a battery, you sacrifice screen quality," Stives said. Also, hard disk drives for such machines are not yet durable enough, nor is the capacity adequate.

"In addition, there is a keyboard problem. As the number of keys continues to increase from 84 to 101, it becomes difficult to fit them in a laptop machine," Stives said. Compaq remains committed to 5¼-in. floppies, which are difficult to fit in a laptop. "There are six million users with 5¼-inch libraries," Stives said.

Pricing is another concern. "There is the issue of one vs. two machines. It is difficult to expect someone to pay \$5,000 for a second machine when they are still not good enough for a primary machine," he added.

One reseller said he believes Compaq may be unwilling to sacrifice its existing level of functionality in order to compete. "Maybe what Compaq is saying is that they cannot fit their Portable II in a laptop size, and they are absolutely right. They are going to have to give up the slots, the 5¼-inch drives and their 101 keys," said Richard Horan, executive director of Executive Computers, Inc., a New York-based reseller of laptop computers.

"They are going to have to learn how to make a laptop and not a trans-

portable. They are two different machines, and until they understand that, I think they are going to stay out of the market," Horan added.

Perhaps Compaq's biggest challenge in the market will be from the Far East. "It is a product category that, in its generic state, is going to be dominated by the Asians, initially the Japanese. Historically, they have been strong in the miniaturization of electronic components," said Michael Gould, an analyst with The Yankee Group in Boston.

Some believe Compaq is unwilling to risk entering a market in which it may not be a leader. "Compaq's image is very important," noted a leading software industry executive. That executive also said he believes, on his sources, that a Compaq laptop is far from imminent.

In addition, it might be difficult for Compaq to maintain its premium pricing strategy in such a competitive market.

Some, however, say that the laptop market has yet to hit its stride and that it will eventually emerge as a major category of microcomputers.

In fact, according to IMS America, the market is growing rapidly. "Laptops are growing at a compounded monthly rate during the last six months of 23% per month in dollars and 11% per month in units in a microcomputer market that is growing at 2% per month in dollars and 1% per month in units," Rehling said. "It is the strongest growth market in the micro area."

Despite Compaq's reluctance in the laptop market, the firm has "a very clear commitment to make smaller, lighter and easier-to-use portables," Compaq's Stives declared.

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## Computer Assoc. buys firm

GARDEN CITY, N.Y. — Computer Associates International, Inc. has acquired The Mega Group, Inc., an Irvine, Calif.-based supplier of decision support software for IBM mainframe users.

The Mega Group products interface with graphics software for use in decision support functions, making the acquisition a possible fit with Computer Associates' Dec. 8 purchase of Integrated Software Systems Corp., said Computer Associates Chairman Charles B. Wang.

The product line includes such information-center-oriented software as Megafile, Megastat and Megacalc. A mainframe spreadsheet, Megacalc allows for the integration of micro spreadsheets with the mainframe, which operates with Lotus Development Corp. 1-2-3-type prompts.

Terms of the agreement were not announced.

The Mega Group was incorporated in 1983 and markets to IBM mainframe installations operating under TSO, CICS and VM/CMS.

## Hayes added to antitrust suit

By Clinton Wilder

SAN FRANCISCO — Modem vendor U.S. Robotics, Inc. announced last week that it has added Hayes Microcomputer Products, Inc. as a defendant in its pending antitrust suit against Business Computer Corp. (Bizcomp).

Citing what it calls a "Hayes-Bizcomp conspiracy" to monopolize the modem market, U.S. Robotics is asking a federal court here to invalidate the two firms' patents for modem escape sequence technology. Hayes recently announced a program to charge a 2% royalty fee to vendors of Hayes-compatible modems that use the technology [CW, Nov. 10].

The action by Skokie, Ill.-based

U.S. Robotics is the first formal modem industry response to the Hayes royalty fee. Vendors have been meeting recently to formulate strategy to fight the Hayes and Bizcomp patents, which some of their competitors said they believe are invalid [CW, Dec. 1].

Hayes paid Sunnyvale, Calif.-based Bizcomp \$2 million in license fees between 1983 and 1985 to use the patent, U.S. Robotics said. The plaintiff alleged that Hayes did so "despite knowing the patent to be invalid" to "bankroll Bizcomp's efforts to enforce its patent against other modem manufacturers."

U.S. Robotics seeks \$5 million in damages. The suit is set for trial in June 1987.

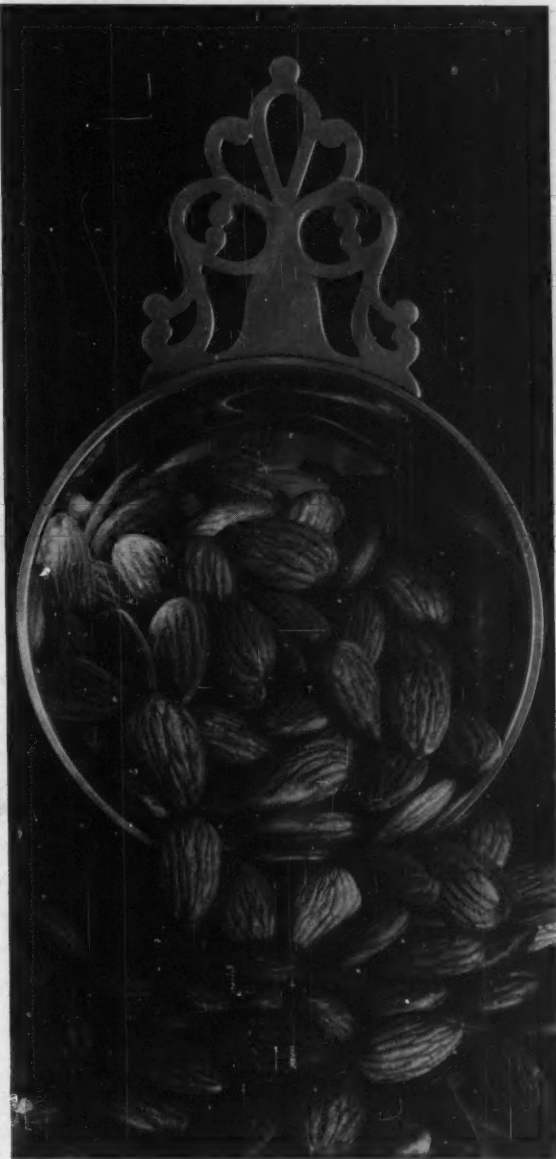


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## NEWS

## Tandem offers backup electronically in TMF

By Jeffrey Beeler

CUPERTINO, Calif. — Tandem Computers, Inc. is expected to introduce today a system utility that reportedly allows users of its Transaction Monitoring Facility (TMF) to electronically back up copies of on-line transactions to an alternate data center location.

Remote Duplicate Database Facility (RDF) continually updates the redundant data base and thus makes the alternate site available as a backup center, said Jerry Raugh, Tandem's security products manager.

Use of the product enables organizations to resume their interrupted computing operations at a backup location as soon as an hour after the damaged facility ceases to function, he said.

Prospective buyers of the utility will include TMF users who process large volumes of critical on-line transactions. Not all of Tandem's users, of course, fall into that category or would find the offering attractive.

Santa Clara, Calif.-based Bank of the West, which uses a Tandem Nonstop II as a front end to its Unisys Corp. — formerly Burroughs Corp. — CPU, has no immediate need for RDF, because its critical files reside on the mainframe, according to Mal-

com Gladwell, vice-president and DP manager. But that could change if the bank's volume of point-of-sale (POS) transactions grows significantly. "In that case, the authorizations might become so important that we'd want to back them up at a remote site," Gladwell said.

For other organizations that already process large numbers of important transactions, maintenance of a remote backup data base makes sense because of the potential for data loss or corruption during breakdowns, according to Gladwell.

Physically residing in both a company's primary system and its intended backup machine, the RDF utility is based on TMF, which constantly monitors changes in networked data bases so that they can be reconstructed following a crash. Transactions are almost instantly copied and transmitted to the backup processor, Tandem said.

Scheduled for release during the second quarter of next year, the utility will cost \$150 per month plus a \$13,750 one-time license fee for the company's EXT-series processors. For other Tandem machines, the monthly and initial license fees are \$300 and \$27,500, respectively.

## Reform dooms free-lancers

From page 1

fessional working as a subcontractor for a Wall Street firm, who asked that his name not be printed. "I'm really upset about this whole thing. I'm amazed that this profession would be picked out from others to be so harassed."

The subcontractor said he fears his colleagues' salaries could be cut in half as employers withhold their taxes and provide them with insurance, a retirement plan, vacation and sick time while holding the line on costs.

The contract workers also stand to lose federal income tax deductions for many expenses incurred for their work.

The Joint Committee on Taxation estimates the clause will raise \$60 million in tax revenue during the next five years.

### Advice for free-lancers

Last week, the Independent Computer Consultants Association, whose 1,900 members are mostly one-person firms, was preparing a paper to advise members on what to do when conferred with employee status, according to executive director Jack Christensen.

"They're going to have to make their own decision and consult with their attorneys. The only real answer is to

change the law," Christensen said.

Section 1706 is supported by larger computer consulting firms that work through employees and consider contract workers less costly, and sometimes unfair, competition.

It is supported by ADAPSO, the trade group for computer software and service firms, whose members in the service area are weighted toward large companies that work through employees.

### The gray area

"ADAPSO has for some time supported more succinct guidelines between what represents an employee and an independent contractor," said Chris Carleton, a spokesman for the group. "We're more addressing the gray area of people who claim to be independent contractors but are functioning more like employees."

Many large employers apparently have yet to assess the impact of the change on their practices, according to spokesmen for several corporations and the consulting firm Nolan, Norton & Co.

One broker of contract consulting services says the new law makes it more difficult to place computer specialists with sought-after skills in short-term jobs, resulting in a less efficient allocation of labor.

"With these new laws, it makes that very difficult because it restricts the mobility of these people substantially," said Dan Greenberg, vice-president of TSR Consulting Services, Inc. in New York, which hires out its own employees and draws on a pool of 8,000 independent professionals in the New York area.

"If they're employed by someone else, they're not in this big pool. They're not available. It affects the ability to react to our clients' needs quickly."

For many contractors, their independent status has been "the only vehicle they have for making good salaries and still remaining technical," Greenberg added. "They are not management-oriented people," he said. Greenberg noted that contractors, brokers and employers never had a chance to debate the law.

The section was not the subject of public hearings but was included in the initial Senate version of the tax bill passed in June, according to tax counsel Gale.

The law was not intended to apply to individuals operating on their own, but it is unclear whether it applies to one-person companies or other small firms, Gale said. "That's when you start getting into trickier areas. That was a question that just wasn't addressed. I guess we had in mind fairly large operations," he said.

Gale said he is trying to put out a statement clarifying the section before the end of year.

"With more data, we might be able to draw a line at the right point," he said.

In eliminating the safe harbor provision, the tax reform act subjects the technical contractors to 20 common law standards used to affirm employee status. They involve questions such as whether an individual is paid by the hour, week or month or in a lump sum, has invested in equipment, provides services in "a continuing relationship" or can realize a profit or loss.

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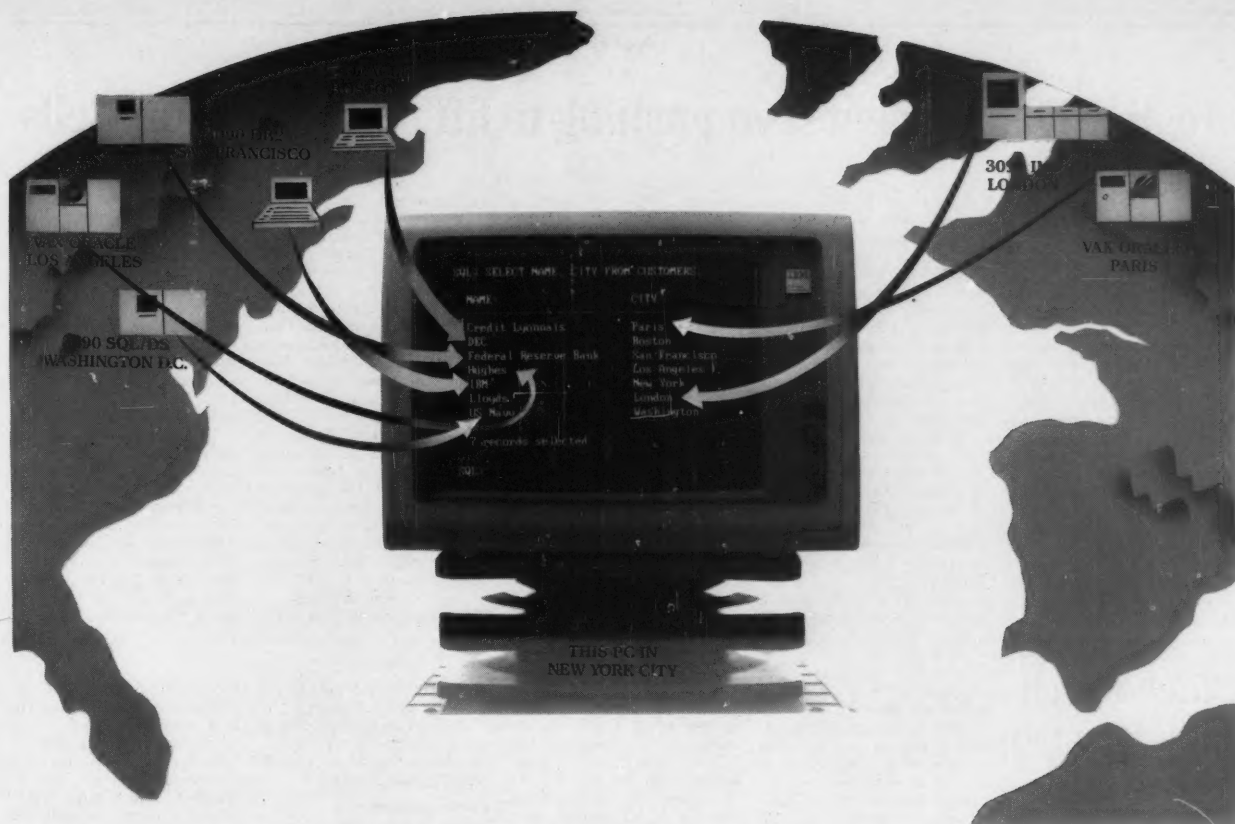
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## NEWS

# Justice Department seen pushing to lift restrictions on Bells

## Could allow firms to manufacture

By Mitch Betts

WASHINGTON, D.C. — Analysts are confidently predicting that next month the U.S. Department of Justice will urge the federal court overseeing the AT&T divestiture to allow the regional holding companies to manufacture telecommunications equipment and provide information services.

The seven holding companies are prohibited from entering the manufacturing, information services or long-distance communications lines of business by the court's existing Modified Final Judgment. The restric-

tions stem from fears the Bell offspring could have unfair advantages in those markets.

However, in January the Justice Department, aided by a report from Washington, D.C., consultant Peter Huber, will send to U.S. District Court Judge Harold H. Greene the department's recommendations for changing that judgment to reflect current characteristics of the marketplace.

Concerning the restriction on manufacturing, Alan Pearce, president of Information Age Economics, Inc. in Bethesda, Md., said, "It's a widely held view within the Justice Department that that restriction cannot be maintained."

Analysts have noted that the telecommunications

equipment manufacturing industry is highly competitive and international in scope

”

*The regional Bell holding companies "may not indulge in joint venture with AT&T or each other. In other words, they can't get back together again."*

— Alan Pearce  
Information Age Economics, Inc.

and that the regional holding companies are already able to market, install and main-

tain customer-premises equipment.

Pearce said that, based on his private discussions with government officials, the department will urge significant relaxation of the restrictions on manufacturing and information services, but not long-haul communications.

George R. Dellinger, telecommunications analyst for Washington Analysis Corp., independently made the same prediction. He added that Greene "will have made up his mind by Labor Day and will probably go along with the equipment manufacturing recommendations, but easing of the information service restrictions faces a more difficult test."

Once Greene receives the recommendations, he will

hold hearings to seek written and oral comments on the issues before deciding the recommendations to accept or reject, Pearce said. "It will not be a quick process," he added.

If the companies are allowed to enter the businesses of manufacturing and information services, they will be subject to a variety of regulatory limits to prevent anti-competitive behavior.

The regional holding companies would be subject to the accounting and Open Network Architecture rules of the Federal Communications Commission, Pearce said. "They may not indulge in joint ventures with AT&T or each other. In other words, they can't get back together again," he added.

## Stock-watch tools lagging

From page 1

Richard M. Phillips, a Washington, D.C., securities lawyer and former chairman of the American Bar Association committee on federal regulation of securities.

Stock-watch software on both the American Exchange (Amex) and New York Stock Exchange (NYSE) is run on the mainframes of the exchanges' subsidiary, the Securities Industry Automation Corp., which processes all trades. The transaction stream from each exchange is monitored by separate programs that watch for fluctu-

ations in price or volume of individual issues.

The exchanges are reluctant to divulge exactly what parameters trigger an alarm, but Frank J. Savarese, assistant vice-president of equities surveillance at Amex, noted that the Amex's Stock Watch Alert Terminal, or SWAT system, is able to match a current trade against a 40-day history of the issue. If the trading volume exceeds what is deemed a normal span for that issue, a high tone is sounded for the surveillance unit; a low volume produces a low tone, while a sudden price movement produces a musical tone. In addition, a voice synthesizer names the issue's symbol, Savarese said.

But as several observers

noted, once the software has identified a potential case of insider trading, the process ceases to be automated and the surveillance unit's "gumshoes" take over.

"Identifying who is doing the trading is a lot more difficult than identifying something is wrong," said Daniel Brooks, a Washington, D.C., attorney and former SEC lawyer who specializes in computer law.

Neither the Amex's SWAT system nor the NYSE's Intermarket Surveillance Information System (ISIS) can determine who executed the trade that triggered the alarm or for whose account they were executed. Both exchanges have the authority to obtain that information by querying their members, but they must then question the account holder on why he ordered the trade at the time he did.

Following up on each alarm is difficult. The Amex system is triggered an average of 80 times a day, Savarese said. Many of the alarms are set off by issue movements brought about by news events or market developments unrelated to insider trading. But those that can-

not so easily be dismissed require manual follow-ups.

"I don't think the SEC and the exchanges have the resources to follow up on their leads," Phillips said.

### Further refinement

Other observers said the stock-watch software needs further refinement. "It's a question of how fine you set the filter," Brooks commented.

If the relative of a director of a company buys a large holding in the company shortly before a merger announcement sends share prices moving upward, the systems will detect that move and sound an alert. On the NYSE, an automated search-and-match system within ISIS checks the names of the officers and directors of the company against the buyer's to see if a potential insider relationship exists.

But this pursuit of insider trading works best "in isolated situations," said Fred Stuckwisch, an aid to Dingell. "With Boesky, it was much more difficult to determine that a specific trade was an unusual situation," he stated.

Boesky executed his

trades through multiple outside firms, as well as his own, and sometimes covered his tracks by ordering a firm he was known to do business with to sell a stock he was interested in acquiring, while others were assembling blocks of it for him.

In testimony before Dingell's subcommittee, the General Accounting Office, an investigative arm of Congress, reported that the NYSE's stock-watch program detected 47 suspicious trading situations involving Boesky. Twenty-three were referred to the SEC for possible action. Eleven are still under investigation, and none of the referrals is believed to have played a role in the case that led Boesky to confess and agree to pay a \$100 million fine.

The NYSE has spent \$20 million in automating its surveillance and transaction audit systems during the last several years, according to testimony by John J. Phelan Jr., chairman of the exchange.

"We can do a lot more with computer surveillance, but it increases the need for resources, not diminishes them," Phillips said



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### An invitation to present papers in Australia

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This important conference will be held at a major convention centre at the Gold Coast, fifty miles south of Brisbane, Queensland.

Interested speakers are asked to send MTE the following information by Jan 15, 1987:-

- outlines of paper
- recent photograph (B&W)
- resume
- two recent papers submitted to or presented at conferences
- names of at least two referees who have heard you speak

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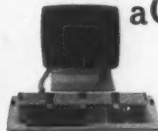
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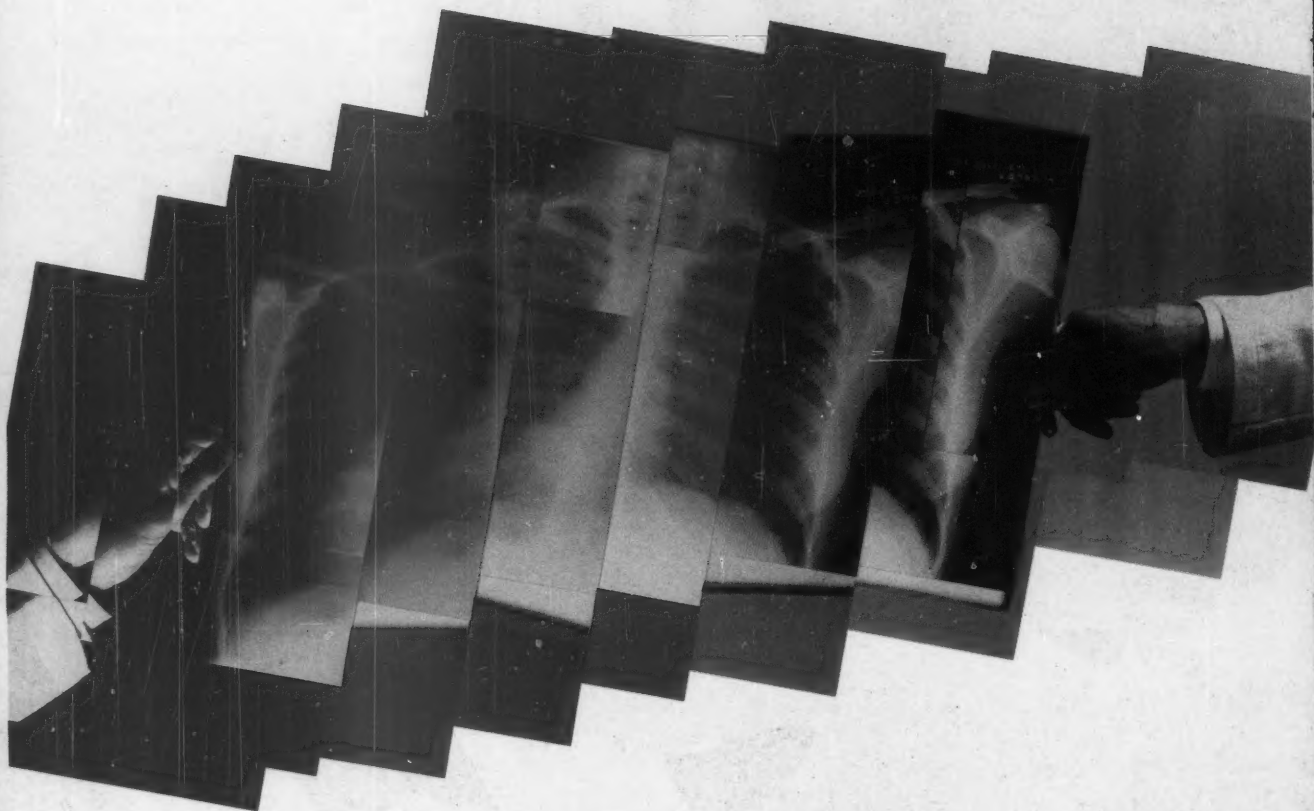
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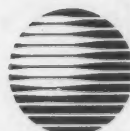
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## NEWS

## Parliament inquiry looms over procurement

Stephen Arkell  
and Celina Bledowska

LONDON — A major political row is brewing in Britain concerning management consultant Arthur Andersen & Co.'s involvement in public-sector computing procurement.

Ann Clwyd, a labor representative of Parliament from Wales, has tabled a motion in the House of Commons requesting a full public inquiry on alleged irregularities in a \$41 million contract for an information system at Wessex Regional Health Authority (RHA). The deal eventually went to a consortium led by Arthur Andersen and gave IBM its first mainframe base in the National Health System.

Clwyd has also called for British Social Services Secretary Norman Fowler to make a statement on a family connection between Arthur Andersen and Junior Health Secretary Edwina Currie and to clarify reports of an internal audit being carried out at the British Department of Health

and Social Security (DHSS) regarding payments made to the firm for consulting work.

According to an article published in the independent British *Journal of Healthcare Computing*, a DHSS official has expressed "grave concern" about the way the Wessex procurement, aimed at providing a regional strategy for patient, personnel and finance systems, was handled.

Bob Venning, National Health Systems information technology officer at the DHSS, has written to Wessex on behalf of suppliers anxious about the length of time that had lapsed since the contract went to tender and the eventual decision. But a DHSS spokesman refused to comment on the current situation.

A group fronted by Digital Equipment Corp. had been tipped as a favorite for the contract but was beaten by a late entry from Arthur Andersen in conjunction with IBM and systems house Technicon Data

Systems.

Officers of the Wessex RHA made a fact-finding trip to the U.S. last summer to look for software to run on DEC systems.

Following the delegation's failure to find suitable software, bidders were given 10 days in August to come up with final tenders.

It was then that the Arthur Andersen bid, which had been rejected in the initial stages, was accepted, after price reductions were made by IBM.

Arthur Andersen had previously acted as management consultant to Wessex. The group will now run the project's \$10 million first phase, with Arthur Andersen acting as the software consultant.

Arthur Andersen has subcontracted Technicon previously on a number of occasions.

Arkell is chief reporter and Bledowska is a staff reporter at Computer News, a CW Communications British publication.

## IBM scolded for role in Swiss project

By Christian Fehr

BERN — IBM's Swiss subsidiary has come under fire for its role in a project to modernize the country's telecommunications network. In a report written by ICS, an independent consulting firm based in Basel, Switzerland, IBM is accused of abusing its position in the project.

Swiss authorities commissioned the study after rejecting a \$44.5 million bid from IBM for a new phase of the so-called Terco project, which is designed to computerize the Swiss telephone network.

The report also criticized the Swiss postal and telecommunications authority, the PTT, for putting IBM staff in charge of the project's critical positions.

Although the necessity to include IBM experts is not disputed, the report maintained, "It was a gross mistake to staff most of the key functions of the project with IBM employees. ... We find it unacceptable and in breach of business ethics if IBM personnel inform their own management as to the contents of confidential PTT papers." IBM acts as both a consultant and a supplier to the project.

The report went on to criticize IBM employees working on the project for neglecting to help PTT staff assume responsibility and leadership for the project. "This ... has allowed IBM to obtain a position of absolute indispensability for the project, to a degree which is in contradiction with IBM's responsibility as a consultant and supplier," according to the report.

Fehr is a staff writer at Computerworld Schweiz, a CW Communications Swiss publication.

## Federal DP workers may undergo drug tests

By Mitch Betts

WASHINGTON, D.C. — The U.S. Office of Personnel Management (OPM), in guidelines for implementing President Reagan's war on drugs in the workplace, has suggested that federal agencies consider random drug testing for federal employees who handle sensitive computer data.

Specifically, OPM guidelines published late last month said agencies should consider testing "employees uniquely positioned to exploit highly sensitive computer or financial data for financial gain." In addition, the guidelines suggested testing employees who have access to classified national security data or are involved in programs that affect public health and safety.

An OPM spokeswoman speculated that a drug-impaired worker could make errors in computer operations that would harm national security, public safety or the agency's mission and that an employee might embezzle government funds to pay for a costly drug habit.

Under the guidelines, each agency head would be given the discretion to determine which jobs require urinalysis tests for drug use, but agencies must discipline those employees or job applicants who test positive or refuse to take the test.

However, the drug-testing program may never begin because of legal challenges by federal employees' labor unions. Three unions have filed suit in federal court against Reagan's

Sept. 15 executive order for the program, charging that it violates the U.S. Constitution's protection against illegal search and seizure.

A spokesman for the National Federation of Federal Employees said there is a strong chance that the court will overturn the presidential order because the case is being heard by the same judge who recently overturned a drug-testing program at the U.S. Customs Service. In a strongly worded decision, Judge Robert F. Collins of the federal district court in New Orleans remarked, "This gross invasion of privacy constitutes a degrading procedure that so detracts from human dignity and self-respect that it shocks the conscience and offends this court's sense of justice."

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# VIEWPOINT

## EDITORIAL

### Menage a trois

First, the good news: Users of Honeywell, Inc.'s computer systems gained at least near-term support for their investments with last week's announcement that the Information Systems group will be spun off into a joint venture controlled by Compagnie des Machines Bull, with NEC Corp. and Honeywell as minority partners. The bargain-basement price Honeywell accepted for its Information Systems business leads us to conclude that Honeywell's only realistic alternative was to abandon its computer business. As the creator of the Honeywell DPS-7 line and lead partner in development of the Distributed Systems Architecture networking scheme, Bull would seem to have the skill and spirit to turn around the fading fortunes of the old BUNCH company.

For Honeywell shops, the benefits of the venture are obvious: The future of Honeywell's computer group will apparently rest in the hands of a company whose sole business is computers. Bull need not be plagued, as Honeywell was, by the need to juggle three diverse and often-conflicting business strategies.

However, the joint venture, called by some a three-headed monster, may well create more problems than it solves. Imagine, for example, this threesome grappling with the very uncertain global socioeconomic forces that periodically whip through Washington, D.C., and Paris, to say nothing of Tokyo. The political shifts in France saw Bull nationalized by the Socialist government in 1982, now denationalized as the control of the government shifts back to the right of center. As such shifts occur, relationships between the two nations alternately chill and thaw, as does the level of cooperation on economic and trade policies.

And what of NEC's involvement here? The Japanese giant will reportedly hold only 15% of this venture, but it is not NEC Chairman Koji Kobayashi's way to remain second fiddle in any endeavor. Indeed, over the 20-plus years of NEC's and Honeywell's formal relationship, the roles of the two partners reversed dramatically, with Honeywell going from paternal technology supplier to struggling technology dependent.

NEC is an aggressive, financially strong force in Japan and is quietly building a major marketing presence in the U.S. in both electronics and computers. It already supplies Honeywell's top-of-the-line mainframe and clearly sees this latest turn of events as an opportunity to increase its visibility in the U.S. But at what price? How will NEC interact with its French partner Bull in this venture, and what impact will that have on Honeywell users? It is difficult enough to manage a two-way international partnership: What will this three-headed monster be like to control?

Thus, long-term prospects are, to our way of thinking, anything but certain, and the factors to be considered by customers making substantial systems investments much more complicated. As our story last week indicated, some long-time Honeywell customers are already biting the bullet and making the expensive conversion to IBM products. The sooner Bull and NEC make their long-term intentions known, the sooner valued customers can calculate the risks of building on past investments.



## LETTERS TO THE EDITOR

### What copyright laws protect against

It is certainly a fine service to your readers that you include in your publication suggestions on how to legally protect one's software. However, it is imperative that these hints be precise and correct.

Alonzo D. Saunders' article, "Learn to profit from customized software contract mistakes" [CW, Nov. 3], made questionable comments about the case of *Whelan v. Jaslow*. Mr. Saunders stated that what saved the developer was his valid copyright.

Saunders then advocated racing to the copyright office with your registration, as "there is little doubt that had the developer delayed filing, or had the lab filed for copyright first, the result would have been the opposite, given the similarity between the two programs."

Saunders' interpretation reveals a basic lack of understanding of the method of acquiring rights under the copyright laws of the U.S.

The author is protected from the time the work is fixed in a tangible medium of expression. There is no obligation at any time during the life of the copyright to register at the copyright office. One must register, however, before bringing suit under the copyright laws.

What the copyright laws protect against is copying. If one copies the work of another, liability can result, even if there has been no registration.

Conversely, one who copies the work of another does not achieve copyright protection for the copied work merely by racing to the copyright office to register a copyright.

One only acquires rights in a work by creating original work. When an author creates an original, tangible work, the protection results whether or not the work is registered with the copyright office.

Saunders' advice to register will certainly not be harmful. One does not bring upon a negative consequence by rushing to register a copyright in works you create. His implication that one who copies may gain rights by being the first to file is without legal basis, however.

In a case such as *Whelan v. Jaslow*, there may be varying burdens of proof depending on who has copyright registrations. However, I find it impossible to say that "there is little doubt . . . the result would have been the opposite."

Robert J. Klepinski  
Minneapolis

### The first European computer

I am writing to correct Vladimir Burevich's claim in "How the Soviet Union plays computer-industry catch-up" [CW, Dec. 1], that the Soviet Union was the second country, and the first in Europe, to develop a computer. This is totally false.

Although it is beyond dispute that the U.S. built the first electronic general-purpose computer, it is well established that the first stored-program electronic computer, EDSAC, was built by the British, led by Maurice Wilkes, in Cambridge, England, in 1947-48. Prior to that, British code-breakers built Colossus, a special-purpose electronic computer used to break German codes during World War II. By 1949, the Lyons Electronic Office, near London, was building the LEO general-purpose computer for business use. The history of the development of the computer is well documented.

Colin J. Davies  
Granada Hills, Calif.

### Taking advantage of electronic mail

I read Kate Hedges' article, "A vendor's view: How you can avoid meetings forever" [CW, Nov. 10], with a great deal of interest. I am frequently surprised by the resistance to E-mail, even by people working directly with computers.

An informal survey of the advertisements in the same issue turned up only 24 vendors listing any kind of E-mail address; this is less than one-tenth of the more than 260 advertisements in the issue. Only two of the vendors supplying E-mail addresses were modem vendors. They wish to sell modems, but evidently don't use their own products. When will people take advantage of this "futuristic" time and stress the savings available now?

H. Lee Robinson  
A. J. Rose Mfg. Co.  
Cleveland

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## VIEWPOINT

### Sing a song of software, a PC full of RAM

There is just something about this time of year when one's thoughts turn away from work to the finer things in life.

#### Toys.

We all have them. Some people have cars, some have model trains, some have musical instruments. Yes, some even have computers as their toys. But if the truth be known, a lot of people who work on computers for a living are also closet painters, hockey players, musicians and a variety of other things just waiting to get out.

Often these same people would like to be able to integrate their computers with their closet pursuits. If yours happens to be music, computers now let you record, compose and play just about anything in your wildest dreams.

#### Electronic instruments

In fact, computerized music is becoming a big business. Take New England Digital Corp., which bills itself as a computer company that makes electronic musical instruments. Priced at \$100,000 and up, their computers are pretty much the Crays of the music business. On one machine, a user can perform music, edit it visually on a monitor, digitally record

and edit songs via keyboard with no messy tape and then print out the score just played.

Then there's a synthesizer company called Ensoniq Co. This company makes a nifty little machine called the Mirage that can store sounds sampled from any source and play them back with the proper note assignment. Thanks to computers, if you want motorcycles revving in the key of A, you've got it. Their machines feature disk drives, random-access and read-only memory and video displays. The only thing that makes these things different from a basic computer is that the keyboard is in octaves, not letters.

But the prize among these companies has to go to Roland Corp. The company manufactures a long list of synthesizers, computerized drum machines, graphics equipment and personal computer software.

Yes, software for IBM and Apple Computer, Inc. PCs, not just one or the other. Roland was one of six U.S. and Japanese electronics manufacturers that banded together to establish a standard for transmission of data between musical instruments. The standard emerged over many months of give-and-take but finally emerged as Musical Instrument Digital Interface (MIDI).

(The fact that this was successfully accomplished between companies from the U.S. and Japan should be enough to make the people responsible for the Manufacturing Automation Protocol green with envy.)

Roland developed an interface for Apple and IBM PCs that allows computers to act as the primary controller for any number of instruments hooked into the computer by MIDI cables. What do you do with it once it gets there? Roland has a software

package called the Music Processing System.

When a synthesizer, or guitar or drum machine or wind instrument with the appropriate link, is hooked into a PC running this software, the microcomputer becomes a complete recording studio, music printing company and

compositional tool. Using regular floppy disks for storage, notes played on the instrument are transmitted to the computer via MIDI. The PC will assign the signal to any of eight different tracks, allowing the user to play eight different sections of a song and then combine them as if using an eight-track tape deck.

Once the song is stored, the user can call up the musical notation of what he has played on the PC. The software has already transcribed the

piece with the appropriate musical symbols such as staves, measures and notes. When everything looks ready to send off to the Philadelphia Orchestra, it can be printed and sent off as a publication-quality musical manuscript.

Now for the kicker. In playing with this stuff, I ended up having to call Roland customer support for help. Not only did Roland help solve my problems (all of which were standard operator malfunction), but they gave me advice on how to achieve more efficient results.

#### Troubleshooting the competition

When I informed them I was also using the software with a machine from another manufacturer, they did not hang up or invalidate my warranty. Instead, they had a thorough knowledge of the competition's machine and even helped me troubleshoot that one.

Finally, I did ask them a question that stumped them, and they said they'd check it out for me. They called me back that afternoon on their dime. Do you know what all of this hardware and software support cost me outside of phone time? Not one red cent. Try getting your word processing and spreadsheet vendors to give you that kind of service. Most of them can't even give you the time of day for free anymore.

So forget what they've been telling you, Virginia. There really is a Santa Claus.

*Newquist writes and consults on artificial intelligence and other advanced high-technology topics from his office in Scottsdale, Ariz.*



By HARVEY P. NEWQUIST

### Gaining a competitive edge without end-user computing

The recent article by J. Daniel Couger, "E pluribus computum" [CW, Nov. 10], is, in my opinion, another example of academia touting end-user computing as if it were a major issue for information systems executives.

I have the greatest respect for Couger as an educator. However, like many of his colleagues, he is simply out in left field when he says, "End-user computing has the greatest potential impact of any development in the computer field." Applications developed by end users have a minor impact on major corporations — the top 1,000 industrial, insurance and banking companies — and their profitability when compared with large systems used to support the major business functions of engineering, marketing, manufacturing and administration.

This is not to denigrate end-user computing. End-user computing for Fortune 1,000 companies is useful in many areas, such as word processing, spreadsheets and electronic mail. Often, end-user computing is the only practical, cost-effective approach for small companies. The problem is that a good and useful tool for specific ap-

plications is touted by many academics and consultants as a panacea, leading to unreasonable expectations on the part of the chief executive and top corporate staff.

#### The panacea of end-user computing

A chief executive officer reading Couger's article might be galvanized into action. I can just see him confronting the vice-president of information services and quoting a respected educator who says end-user computing "has the greatest potential impact of any development in the computer field." The poor MIS executive has to explain why end-user computing has not been the panacea in his company that Couger sees it to be in all companies.

The Fortune 1,000 industrial companies spend about 1.5% of sales, or \$45 billion, on data processing. The portion of this amount going into end-user computing is minuscule. True enough, computer-based information systems may be the single most important business tool since the industrial revolution. Computer systems can dramatically reduce the cost of transaction processing and, in the hands of competent systems executives, provide innovative applications that offer the competitive edge of improved customer service, lower administrative costs and investments

and a shorter product development cycle. These competitive advantage systems are rarely, if ever, end-user-oriented applications.

Let's touch on four examples of applications that have a far greater potential impact on a company than end-user computing.

- Computer-aided engineering. Design and drafting techniques using advanced engineering and graphic software are revolutionizing the design of products, providing potential for profit improvement and competitive advantage.

- Computer-aided manufacturing.

Have you seen one of the "lights-out" factories where raw materials are brought in at one end and the finished product comes out the other end with only one or two lonely caretakers walking the factory floor? It is hard to overstate the importance of computer-based factory automation. To compete successfully in the international marketplace, one must, in the long run, be a low-cost producer, and that means automation.

- Marketing systems. Computer-based information systems are making incredible advances possible in marketing. Huge data bases and sophisticated search software make it possible to zero in on markets, resulting in far more effective use of adver-

tising and sales promotion dollars. Order entry and inventory management systems can dramatically improve customer service and inventory turns and reduce administrative costs.

- Expert systems. The concept of expert systems is one of extracting knowledge information from an expert and locking it into software. Information concerning the subject matter is then entered into the system to replicate the results that would have been obtained by the personal analysis of an expert. This is a powerful tool destined to have a major impact on science, business and education.

This is not to deny that it is important for the MIS executive to develop an effective program to encourage the development of end-user computing and coordinate the effective use of micro hardware and software. But, end-user computing is not the enabling technology of competitive advantage systems.

As practitioners, we must concentrate most of our resources on systems that make a real difference in improving customer service, decreasing investment in working capital, reducing administrative and product design costs and improving manufacturing methods. The key to delivering such systems is a good corporate MIS plan, updated annually. This is the area in which academia really can help.

#### READER'S PLATFORM

By J. ROBERT RIGGS

*Riggs is president of a Dallas consulting firm specializing in strategic systems planning and formerly was vice-president of systems planning for Dresser Industries, Inc.*



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Los Angeles . . . . .	Jan 29	<b>NJ</b> Iselin . . . . .	Mar 4
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# SYSTEMS & PERIPHERALS



## HARD TALK

James Connolly

## Honeywell's merger mystery

The early signs were ominous. It looked like Honeywell, Inc. was going to leave its users in the dark as the company negotiated to divest itself of its computer operation.

Now, with those negotiations having led to a tentative agreement, it appears Honeywell was more open with its customers than it seemed with its first announcement of a restructuring — a three-paragraph statement Sept. 24 that left the public guessing as to whether Honeywell Information Systems was being sold, reorganized or abandoned.

Because the lack of clarity left so much room for speculation, Honeywell was criticized in this column and elsewhere for being so vague. However, Honeywell took the responsibility in the weeks following the September release to keep major customers informed of what Honeywell wanted to do and how the proposed combination of the information systems group with Groupe Bull and NEC Corp. would affect them.

Honeywell executives apparently learned from other mergers, in particular the combination of Burroughs Corp. and Sperry Corp. into Unisys Corp., and tried to minimize the impact on customers and employees. For example, Honeywell officials who had friends and family members employed by Burroughs and Sperry examined memos sent to those workers in connection with the Burroughs-Sperry deal. The officials questioned the workers about

See **HONEYWELL'S** page 20

Connolly is Computerworld's senior editor, systems & peripherals.

## What's next for IBM?

### Consultant forecasts strategies, limitations

By Eddy Goldberg

NEW YORK — "The key to mainframe technology is the ability to move information around a network of tightly coupled workstations," according to IBM-watcher William S. Husband.

"The key thing happening in the next five years is linking IBM Personal Computers and workstations to the mainframe via local-area networks and software links," he continued, adding that 1987 to 1990 will be the period in which micro-to-mainframe links are exploited.

Husband, speaking at a recent seminar here on behalf of his Palatine, Ill.-based 20th Century Systems, Inc., analyzed the directions of computing — and IBM in particular. He also works as a senior consultant for The Meridian Group, a third-party lessor of computer and telecommunications equipment in Deerfield, Ill.

By the mid-1990s, Husband said, there will be two types of users. The first will be banks and insurance companies, for example, with centralized computing systems resembling most systems today. However, the majority of corporate users will have moved the computing function out from the data center to the user site, either through departmental processors or directly to the desk top. This in turn will require high-speed links between the mainframe and the workstations.

Also, in many companies in the 1990s, he predicted, "The mainframe will be nothing more than a repository for information" for operating systems, maintenance and support and access to workstations.

Looking ahead to 1987 and beyond, Husband broke down his predictions of IBM's technology and product strategies into hardware and software.

"In the 1990s, hardware costs will be exceptionally low, except for the mainframe," he said, with mainframe hardware.

See **WHAT'S** page 20

## DEC offers Q-Bus processor

By James Connolly

HUDSON, Mass. — Digital Equipment Corp. has introduced a single-board peripheral processor it claims provides twice the performance of its predecessor.

The KXJ11-C, designed for use with DEC Q-Bus, acts as a real-time processor, coprocessor or I/O processor. It is intended for use in real-time, communications and computer-intensive environments.

The real-time environments include laboratory or computer-aided manufacturing, where DEC claims it provides predictable real-time response to interrupt signals for data collection from multiple sources, CPU power for data reduction and preprocessing, on-board memory for temporary storage and direct-memory access (DMA) and shared-memory data transfer for host access to data.

As an I/O processor, the KXJ11-C was designed to offload and simplify communications by handling protocols such as

CCITT X.25. It contains a two-channel DMA controller and two fully programmable synchronous and asynchronous serial line units, a 20-bit parallel programmable port and an asynchronous serial console port.

It also features DEC's J-11 16-bit microprocessor with floating-point capability and 512K bytes of memory for use in high-speed calculations and mathematical modeling. The module contains 64K bytes of programmable read-only memory, of which 48K bytes are for user software and 16K bytes are for firmware. Software support is provided by DEC Micropower/Pascal application tools and programming language.

A DEC spokesman said the product's architecture is a subset of the earlier KXT11-C I/O architecture. He said that allows software transportability and migration with minor modifications.

The KXJ11-C costs \$3,500.

## INSIDE

Kurzweil releases first end-user implementation of its voice recognition system/21

## NEW THIS WEEK

■ Wang offers streaming cartridge tape drive for VS systems

■ For more on this and other new products, see pp. 63-65.

## INSTANT ANALYSIS

"The user is the only driving force in standards. He has to get what he wants or not buy."

— Rudolf Strobl, senior management consultant at Arthur D. Little, Inc.

## Supercomputer evaluation methods lack foundation

### Report says significant variables are ignored

By Donna Raimondi

Performance evaluation methods for supercomputers are often inadequate, misleading and without a scientific foundation. So says a report of observations and recommendations from a National Academy of Sciences study sponsored by the Department of Energy and the Office of Naval Research.

Supercomputers — vital components in U.S. industry and defense — should be evaluated not only on millions of instructions per second (MIPS), million floating point operations per second (MFLOPS) and cost but on factors such as obsolescence,

compatibility and adherence to accepted standards, the report says.

The purpose of computer evaluation is to determine the value of a computer and, by implication, the computer system of which it is a major part. The value of a computer is application-, site- and time-dependent, the study says.

Proper evaluation is extremely important to end users because it will guide them to the proper match of machine and application. "Certain types of applications are extremely effectively handled by a certain type of architecture, whereas another type of problem is handled much better by a radically different type of architecture," says E. F. Infante, chairman of the committee on supercomputer performance and development that issued the report.

Evaluations that illuminate good matches between applications and machines will also impact the design of next-generation systems, says Robert Ewald, a researcher at Cray Research, Inc. and a member of the committee.

Having good measurements could help end-user reliance on claims vendors make that their systems are the world's fastest. "Users need to be more realistic and look at all aspects of how the system works, not just how fast a vendor can make it run," Ewald says.

Infante, dean of the University of Minnesota's Institute of Technology, says there are strong indications that the technology to evaluate the newer architectures, such as various types of multiprocessing, exists.

Supercomputer architectures —

whether parallel, sequential or of another design — should be paired with applications for accurate evaluation. But in order to do that, both the architectures and the applications need to be well defined.

The report concludes that manufacturers should provide supercomputers with hardware and software that collect evaluation data and that funding agencies should emphasize evaluation methods in existing research and development programs.

To bring all this together, the report recommends that the Department of Energy undertake a leadership role in establishing formal mechanisms to track, assess and disseminate research results with a view to bringing about commonly accepted methodologies of supercomputer performance evaluation.

## SYSTEMS &amp; PERIPHERALS

## What's next for IBM?

From page 19

ware prices soaring in the next five years. IBM's top-of-the-line 3090 mainframe, with eight tightly coupled processors, will cost in excess of \$20 million and be available by 1988. "Performance will rise, but so will prices," he said, adding that one way IBM will mitigate high hardware prices will be through cheap memory.

Nevertheless, Husband said he thinks memory will continue to be the chief limitation of both personal computers and mainframes as applications and users grow. "You'll run out of memory before you run out of MIPS [millions of instructions per second]," he claimed. "The trend is clearly in the growth of ultralarge memories, and users are going to be crying out for more."

The eight-processor 3090, which he predicted will appear in late 1987, will be a different box than the 3090-400. It will occupy the same floor space, but upgrading from a 3090-400 to a 3090-800 will require a complete replacement of the system — a "two-ton upgrade," he predicted.

By the second quarter of 1987, Husband said, IBM will deliver a "3090-II" with a minimum 10- to 12-MIPS performance range for the entry-level system and a top-of-the-line performance of more than 90 MIPS in either a six- or eight-coupled version.

"The selling price of the 3090-II will be slightly higher than the current 3090, but the performance will be considerably greater," he stated. "Once that is accomplished, the cost/performance will remain relatively constant until early 1988."

This is also a likely time period for major price/performance boosts for the current 3090-architecture systems, Husband said. A major boost in channel speeds is a near-certainty, with at least a doubling in the data rate. He speculated that a boost in internal computing performance will also occur at this time.

In about late 1989, delivery of the Summit-architecture machines will begin, with a "Summit II" appearing in late 1991, he predicted. Looking ahead, he said the mid-1990s will see IBM delivering a mainframe with 10 times the performance of the 3090/400 — 500 MIPS of tightly coupled processor performance.

For the 4300 series, Husband predicted one more upgrade — a high-performance 4381 with 3083 Model J capabilities. A high-level 4381 could See **WHAT'S** page 21

## Honeywell's merger mystery

From page 19

how they felt when they learned of corporate moves.

For the customers, Honeywell tried to keep its sales force informed, and sales representatives passed on to the customers what information the securities laws allowed.

It appears those efforts paid off. A survey of Honeywell customers in the days following the Honeywell-NEC-Bull agreement revealed little of the user confusion discovered after the Burroughs-Sperry merger.

There appear to have been few surprises for Honeywell customers two weeks ago when Honeywell an-

nounced the deal under which NEC and Bull will buy 57% of Honeywell Information Systems, with Bull being the controlling partner.

Of course, the Honeywell situation is different from the Burroughs-Sperry situation. Honeywell, Bull and NEC have been working as partners for as long as 24 years. Many Honeywell customers already run equipment made by Bull and NEC that is sold under the Honeywell label; in addition, some Bull customers already run Honeywell-designed systems.

On the day the joint venture was announced, there was little criticism coming from the user base. So Honeywell deserves credit for going beyond its original vague message and working for more than two months to keep the customers informed and win their support.



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INSTRUMENTS

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## SYSTEMS &amp; PERIPHERALS

## What's next for IBM?

From page 20

replace the 3090-150. Alternately, the 9370, which he said he thinks is a system that could surprise users with its potential for upward expandability, could also fill this performance slot.

Another way the role of the 9370 could be expanded, Husband said, is through add-on cards that emulate other systems, such as the System/36. This would give System/36 users a growth path with a "no pain" conversion. Other cards for Unix or other operating systems would make the 9370 a contender as a mid-range solution.

Another development in 1990 or 1991 will be a new architecture to run a low-end MVS operating system. It will be the size of a television set, Husband predicted, with 2 MIPS of performance and 16M bytes of memory, will cost about \$70,000 and will be roughly equivalent in performance to today's intermediate-level 4381s.

### Software predictions

Turning to software, Husband noted, "Software on the mainframe will continue to become more complex" and require costly specialists to maintain it. "Over the next one to two years, IBM will continue this plethora of discrete software products to fill out its offerings," he predicted.

Beginning in 1988 or 1989, however, IBM will repackaging its software

products, bundling its discrete offerings into packages. This will reduce the price exponentially and result in further savings from reduced support requirements and easier installation, he said.

One current example of this practice is IBM's VM/Integrated System (VM/IS) and VM/IS Base. In its Oct. 7 announcement literature, IBM described these offerings as "an integrated software solution for intermediate and low-end System/370 environments. It consists of VM/IS Base and eight optional application packages containing 28 licensed programs." In addition, IBM is offering graduated charges for VM/IS Base.

Husband also said he expects IBM to announce software products to help manage its other software products, further reducing maintenance requirements.

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Haasline 1500	X	X		
Lear Singler ADM-3A	X	X		
Lear Singler ADM-5	X	X		
TeleVideo 910, 910+, 912, 920, 925, 925E	X	X		
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## Voice system cures MD ills

By Donna Raimondi

BOSTON — A radiologist here, hampered by secretarial misunderstandings of his Indian accent, is writing his radiology reports with a Kurzweil Applied Intelligence, Inc. 1,000-word, voice-controlled computer system that was officially released last week.

The Voicerad System, which runs on an IBM Personal Computer or compatible, allows radiologists to dictate, edit and print out diagnostic X-ray reports by voice. When more than one doctor uses the system, each loads his own vocabulary and voice profile. The system, available now, costs \$15,500 in a Kurzweil stand-alone version or \$12,900 for the software and voice unit.

"The major benefit is that I am not dependent on the secretarial help, which sometimes can be a pain in the neck," said Dr. Meoukote Srinivasan, radiologist at New England Baptist Hospital. "It was difficult for them to get used to my accent."

### Drawbacks

The system has some drawbacks, Srinivasan said. Initially, he had to retrain the computer several times to accept his speech. When he dictates into the system, he must speak slowly and articulate each syllable. In addition, the voice box cannot be used if the speaker is hoarse or has a bad cold, because it will not recognize the speech.

On the positive side, Voicerad saves a lot of time and aggravation, Srinivasan said. Although Kurzweil claims the unit recognizes 1,000 words or phrases, Srinivasan said it actually responds to more.

Although Kurzweil has sold more than 400 voice systems to OEMs and value-added resellers, this is the first one directed at end users, a spokesman said.

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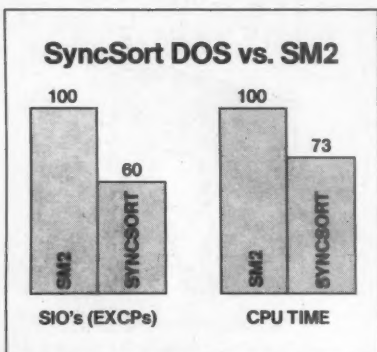
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The moral to this story: smart cookies are quick to reject half-baked solutions in favor of SyncSort DOS. Call us for a demonstration. Once you get a taste you will be hungry for more.

**SyncSort DOS**

One smart cookie deserves another.

# SOFTWARE & SERVICES



**SOFTLINE**  
Thomas O'Flaherty

## Distributing the racer's edge

In a previous column, I described how software could become a means of obtaining competitive advantage. However, this importance heightens risk. Competitive advantage is typically gained by being first, fast, flexible and, of course, doing things right the first time, but building innovative software is often slow, and the results are too often fragile, inflexible or unsuitable.

Here are some ways these risks can be contained:

**Small is beautiful.** Many people assume that the larger and more complex a system is, the more important it is. Such systems have hundreds of millions of instructions per second (MIPS) of processing power, hundreds of thousands of lines of code, tens of thousands of terminals and an enterprise-wide data base.

Obviously, these kinds of systems do things that could not be performed any other way. But for many organizations, the unanswered question is whether the resources consumed and the opportunities postponed are commensurate with results.

One problem is that launching a single large system can commit an enterprise to a certain direction for years to come.

It may also be years before this kind of system produces much in the way of results. By the time results appear, business conditions may be much different, in which case even a well-executed system produces only marginal benefits.

An even more serious problem is that these large systems tend to isolate systems builders from systems users and customers.

See **DISTRIBUTING** page 26

O'Flaherty is a principal of Information Service Strategies, N.Y.-based consultants on improving the effectiveness of information systems.

## Code analyzer evaluated

Helps users trace logic path, search for bugs

By Charles Babcock

With maintenance consuming more than half of DP budgets, experts in both the federal government and business say a new Cobol analyzing tool offers one way of easing the maintenance burden.

The government's Software Management Support Center in Falls Church, Va., selected Via/Insight from Viasoft, Inc. in Phoenix, as part of its Programmer's Workbench, which it leases to other agencies. Montgomery Ward and Co. in Chicago has installed it, and senior consultant Vince Dover said he anticipates a 10% productivity increase overall, once his company's maintenance staff is trained to use the system.

Nicholas Zvegintzov, in an evaluation of the product in his newsletter, "Software

Maintenance News," called Via/Insight "a giant step forward."

Cobol analyzing tools have existed for several years but have been limited to drawing flow charts of logic paths or examining specific functions. Most such products "give you the answer to the question that the analyzer is preprogrammed to do," according to Richard G. Harrison, director of the Software Management Support Center.

With Via/Insight, a programmer can interactively trace the path of a variable backward from the point that it caused a program to abend to the point where it was assigned an erroneous value. Tracking is done on a 3270-type terminal, with a programmer scrolling through the logic path of the source code after it has been put through a batch process that analyzes it.

A programmer working with the Viasoft product "can do what-if evaluations on the code all along the logic path without

See **CODE** page 28

### NEW THIS WEEK

- Oracle offers end-user interface for Oracle DBMS

- For more on this and other new products, see pp. 63-65.

### INSTANT ANALYSIS

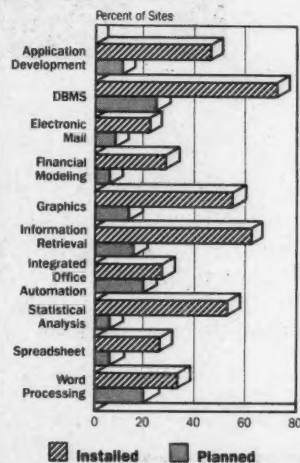
"About 50% of AI is focused on the user interface, not the processing. We perceive the world before we interpret it."

— Milton J. Clark, chairman of Knowledge-Based Network Systems, Inc.

### DATA VIEW

#### Software use

Information center mainframe survey found DBMS in use at 73% of 600 sites



Information provided by Computer Intelligence Corp., October 1986

## Micro-to-host tool saves time

By James A. Martin

NATICK, Mass. — McCormack & Dodge Corp. has announced PC Minlink. The micro-to-host communications tool is said to enable IBM and compatible microcomputers to download, manipulate and upload data residing in M&D's G/L Plus general ledger system for IBM System/38 as well as Digital Equipment Corp. VAX minicomputers.

PC Minlink is said to eliminate the need for end users to rekey data from host systems into microcomputer spreadsheet applications such as Lotus Corp.'s 1-2-3. M&D claims this attribute will save end users time and reduce the possibility of error.

One G/L Plus user and PC Minlink beta-test site said if M&D had not developed it, he would have.

"I was trying to write programs to do exactly the same thing that this product does when I found out they had developed it," said Robert Fournier, manager of financial systems for Tropigas International Corp. in Coral Gables, Fla. "This application provided us with a tremendous amount of savings. In data processing

See **MICRO** page 28

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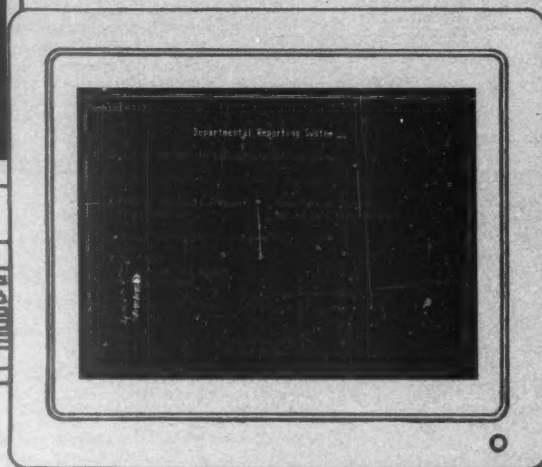
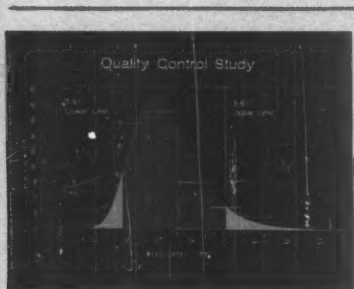
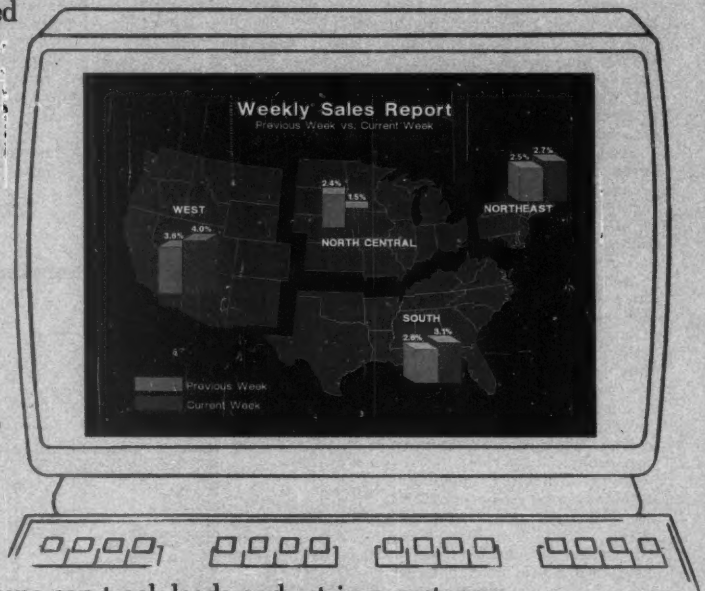
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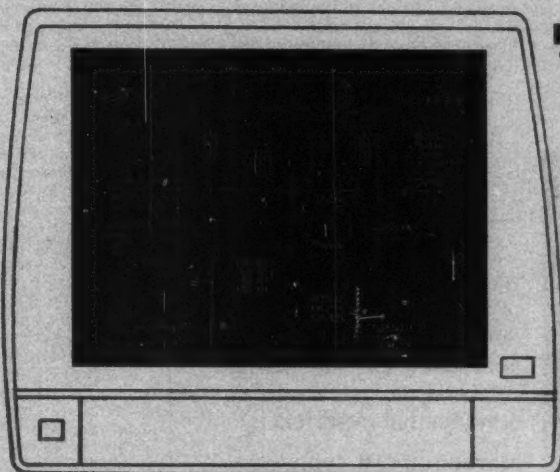
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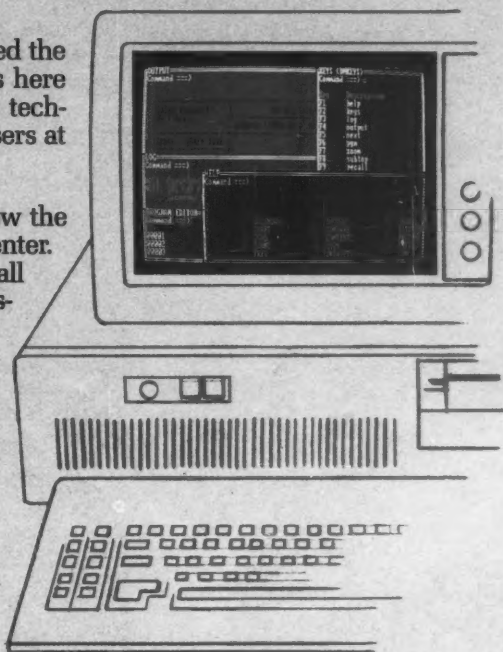
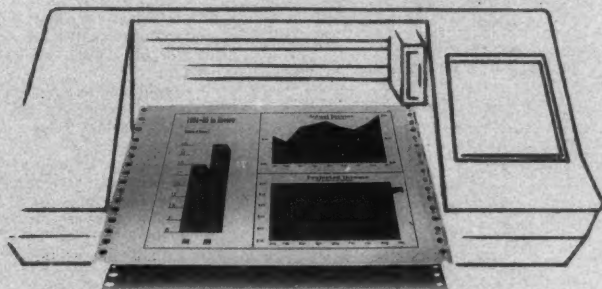
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## SOFTWARE &amp; SERVICES

## Distributing racer's edge

From page 23

This state of affairs was not so critical as long as most computer systems were devoted to administrative or support activities.

But as computer systems are introduced into mainstream areas of a business, isolation, inflexibility and

fragility are becoming live issues for previously unconcerned business unit managers.

Many business unit managers have been taught by personal computers that small is beautiful. These managers are especially impatient when they compare classic mainframe-based systems with PC systems.

Information Systems managers are often frustrated in their attempts to explain the differences between what

large systems can do and what micros can do.

In many cases, part of the problem is that Information Systems professionals do believe that big is better.

**Decentralization.** In reality, size is usually neutral. It is certainly true, though, that the smaller an application is, the easier it is to comprehend or change. The size issue is shorthand for control and knowledge of an application — or involvement.

In many organizations, Information Systems and business unit managers have agreed, implicitly or explicitly, that business units do not get involved enough in systems design, implementation and modification. However, they find that involvement difficult to define, let alone make work.

PC systems, at best, only address some concerns. Another solution has been to move activities out of the central Information Systems

organization into business units, or decentralize.

Decentralization is the extreme case of user involvement, so it is useful to understand some of the issues that determine its success:

- Do all parties want the change?
- Will business units supply the dollars and, most important, devote time and knowledge to information systems?
- Will a decentralized operation have the critical mass for technical knowledge and career paths?
- Are there critical requirements for enterprisewide information systems?

With careful analysis and planning, decentralization can produce positive results. Too often, though, previous problems are replicated in miniature or made worse.

**Enterprisewide systems.** The biggest barrier to decentralization is the last point on the list — the need for enterprisewide strategic information systems. The remainder of this column will explore how enterprisewide information systems can be made more supportive of business unit involvement.

Let's assume that a portfolio of current and future information system projects has been assembled. Let's make an even larger assumption that there is agreement on which projects are strategic.

At this stage, project analysis generally turns inward to such questions as whether the data base should be stand-alone or integrated, the kind of data base management system to employ, terminal networks and so on.

The missing link is a classification of applications from the standpoint of business unit involvement. Such classification has to be multidimensional and sensitive to an organization's needs.

The following are examples of project classification:

- Analytic systems — for example, many marketing and financial analysis applications, often using extracted data.
- Small production systems — for example, a divisional order entry/sales tracking system.
- Large production systems — that is, classic transaction applications.

The lines between each of the systems will often blur and, equally important, may be organization-specific — a large system for a \$100 million insurance company will be much different than one used by a \$2 billion company.

For example, many analytic applications are still integrated with a parent production application. Sometimes this integration is indirect or disguised, like an Information Center whose

See **DISTRIBUTING** page 28

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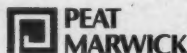
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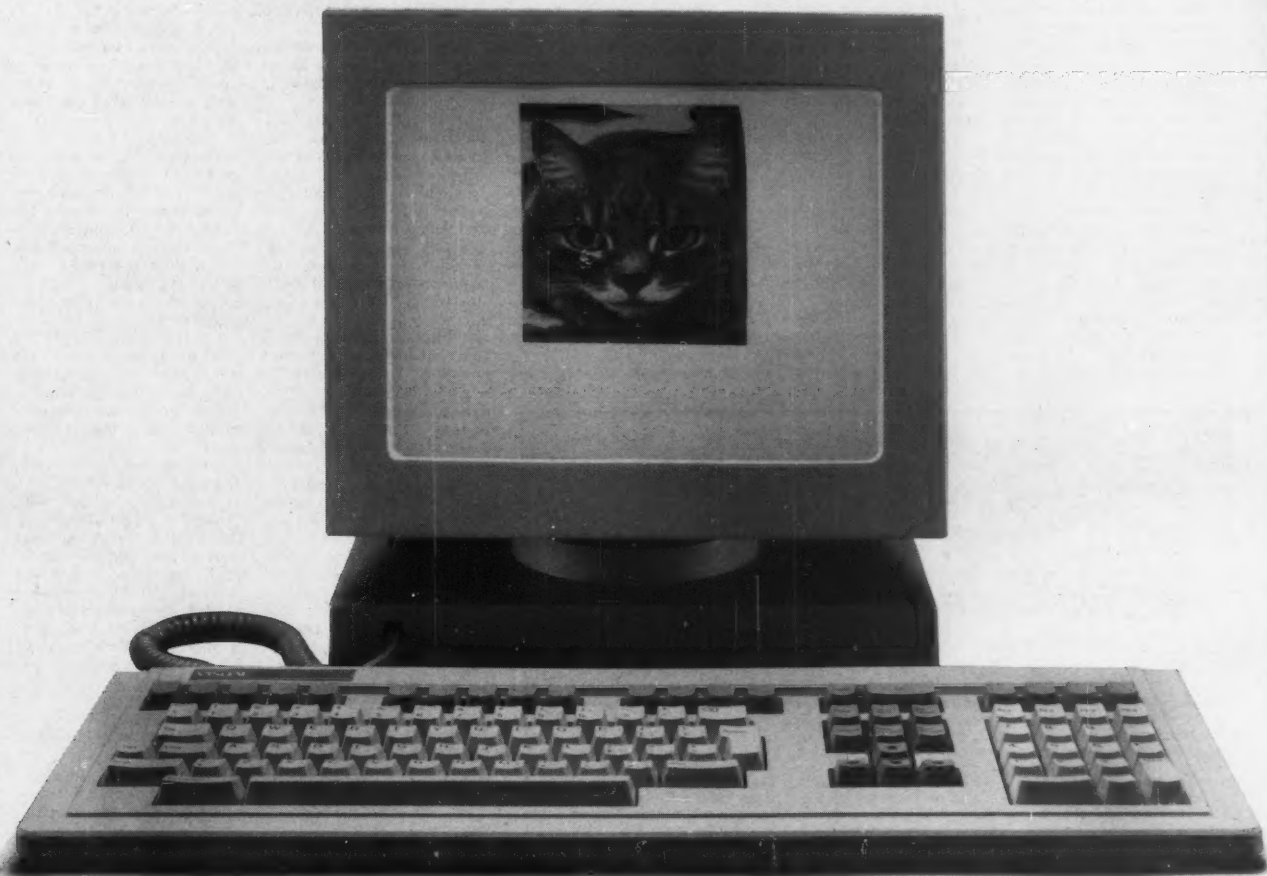


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But that's still not all. The Visual 600 series also features an auxiliary port and local support of both conventional and laser printers, data tablets, mice and plotters. Desktop

accessories include pop-up calendar, calculator, alarm clock and windows.

Initially, the Visual 600 series may be purchased in one of five off-the-shelf models. Versions available include the Visual 601, a full featured ASCII terminal; the Visual 602, a full featured ANSI terminal; the Visual 603, a VT220 Compatible; the Visual 604, a PC display terminal; and the Visual 630, a business graphics terminal.

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## SOFTWARE &amp; SERVICES

## Micro-to-host tool saves time

From page 23

alone, it allowed us to do a month's work in two days."

The ability to download account information, manipulate the data in Lotus and upload to the host is "a significant step for us," according to Jerome Jernack, senior MIS analyst for Erb Lumber in Birmingham, Mich. "It saves us a lot of keypunching and makes the whole process considerably easier."

No serious glitches were reported in the software, and minor problems were reported to M&D and corrected in the commercial release, Fournier said. PC Minlink "does just about everything I was planning to do myself," he added, although additional features, such as on-line jour-

nal processing, would be appreciated in future releases.

PC Minlink resides on both the host and microcomputer and includes test data, extraction requests and spreadsheet templates to facilitate modeling and forecast analysis.

### Menus and Help screens

The product offers menus and Help screens and uses the G/L Plus on-line query report writer for data extractions.

PC Minlink for the System/38 is available this month for a site licensing fee of \$4,500, regardless of the number of microcomputers supported.

The DEC VAX version is scheduled for release in March 1987 at the same price. Plans are to release versions for the IBM System/36 and the Hewlett-Packard Co. 3000 minicomputers in the third quarter of 1987.

## Code analyzer evaluated

From page 23

touching the source code," Harrison claimed.

Related Cobol tools, such as "Group Operations, Inc.'s Scan Cobol or Peat, Marwick, Mitchell & Co.'s Pathvu perform more limited functions," Zvegintzov wrote in his evaluation. "They answer the question, 'How many paths reach this paragraph name?' With Via/Insight, all possible paths from anything to anything are immediately accessible and, in particular, the paths from data modification to data use," he wrote.

Maintenance programmers typically spend hours studying the line-by-line dumps of source code, looking for the point at which a variable be-

comes an unanticipated value and then work backward, trying to find the reason why. This "desk check" or manual reading of code is time consuming and sometimes mind-bending since a variable that follows one path at one value can follow a different path at another value.

The reader must be certain at all times that he knows what the data represents, Zvegintzov pointed out.

With Via/Insight, this path tracing is done automatically either forward or backward, with documentation from the batch analysis available in the screen margin. Among other things, the analysis will point out lines of code that are no longer being accessed and have therefore become worthless to the current version.

"When you get right down to it, nobody can touch them [Via/Insight]," Harrison said. He evaluated competing Cobol analysis tools for the General Service Administration's Programmer's Workbench. Via/Insight is one of 11 tools in the workbench sold to such federal agencies as the Navy Supply Systems Command, Social Security Administration and U.S. Army Information Systems Command.

Montgomery Ward's Dover said being able to track a variable along a logic path was more valuable than


drawing a flow chart. The charts tend to be "so huge nobody looks at them," he commented.

The maintenance programmer needs to "go to all the points where it is possible for things to change and look at each branch as if you were the test data." Via/Insight automatically traces the path of a variable, he noted, "but it's still possible to fool yourself if things in the data are not what you think they are."

Becoming familiar with the logic of a program is one of the most time-consuming tasks of the maintenance programmer, Dover said. His staff members typically take three days to become familiar with a program's code; with Via/Insight, he has observed that process being reduced to half a day.

The product could also be used to check the logic of a new program during the walk-through stage when a second programmer inspects a developer's work, Dover said.

The analyzer is available at a price of \$60,000 for a 99-year license. It has been beta tested for a year at Pennzoil Co. It will analyze Cobol that runs under any IBM mainframe compilers, including Cobol 68, Cobol 74 and Cobol VS II. It runs under IBM's Interactive System Productivity Facility in MVS operating system environments.



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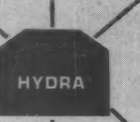
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**Dwight Ayle, Sr. Instruction Programmer Analyst**  
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## Distributing racer's edge

From page 26

users need constant assistance by a central technical staff.

In many cases, it is not suitable to let business units construct their own applications. Either they would not be able to or could not construct systems that are robust enough.

Typically, small production systems fall into this category. In such a case, the fourth-generation language/prototyping approach is ideal

for, among others, the following reasons:

- A fourth-generation language allows for a less ambiguous sharing of specification information between systems and business professionals.

- Prototyping recognizes that specifications will often be wrong or wrongly executed the first time.

There is still resistance to the use of fourth-generation languages by systems professionals. However, these languages now have enough of a track record so that those opposed to them should have to show why fourth-generation languages are not suitable.

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## Directories List 46,000 DP Users

Each directory of computer installations lists 10,000-16,000 computer users covering the NY Metro Area (NY, NJ & CT), the Mid-Atlantic States (PA, VA, MD, DC, WV & DE), and the New England area (MA, ME, NH, RI & VT). Each site includes a profile of the hardware installed, software installed, (languages, databases, etc.), consultants

used, future plans, applications and DP executives' names, titles, and phone numbers. An index provides quick access to 133 cross references by hardware, software and industry. Price: NY-\$700, MA-\$395, and NE-\$395. Call (212) 683-0606. Computer Management Research, Inc. 20 Waterside Plaza, NY, NY 10010.

# COMMUNICATIONS

## Converter ties asynchronous to bisynchronous

ST. PAUL, Minn. — NCR Comten, Inc. is now shipping the company's Integrated Protocol Converter (IPC), which performs asynchronous to bisynchronous protocol conversion.

Designed for the Comten 5620 Communications Processor, the protocol converter reportedly allows users to access Systems Network Architecture (SNA), non-SNA or non-IBM mainframe applications from asynchronous devices, according to the vendor.

The Comten IPC also allows data from asynchronous terminals to pass through with no protocol conversion so that these terminals can continue to access non-SNA applications without additional hardware or software.

The Comten IPC is available in 8-, 16-, 24- and 32-port versions. Implemented in the Comten 5620, it provides protocol conversion for up to 32 asynchronous devices and allows up to 12 of those devices to switch between protocol conversion and native pass-through with no protocol conversion.

A fully configured Comten 5620 can support an additional 16 communications lines supporting bisynchronous, synchronous data link control or CCITT X.25 traffic, the vendor said.

The device automatically detects the transmission rate of incoming data, supporting line speeds from 300 bit/sec. to 9.6K bit/sec.

The Comten IPC operates with menus and display screens and provides the asynchronous user with such functions of an IBM 3270 display device as full-screen editing, program function key operations and keyboard initialization sequences, NCR Comten said.

The Comten IPC supports 43 standard terminal types and allows users to set up translation tables for up to three additional terminal types.

NCR Comten reports that the protocol converter ranges in price from \$6,780 for the 8-line model to \$14,290 for the 32-line version.

## Firms unveil fiber-optic link

PC network accessibility,  
LAN connection offered

By Peggy Watt

PALO ALTO, Calif. — Wollongong Group, Inc.'s networking software now runs on optical-fiber Ethernet links from Codenoll Technology Corp., the two companies announced recently. The jointly developed product enables an IBM Personal Computer to communicate with a wide range of workstations and hosts over a 10M bit/sec. fiber-optic Ethernet local-area network (LAN).

Codenoll's Codenoll-3051 Fiber Optic Link Up Ethernet adapter card provides the basic LAN connection for IBM PCs, PC ATs and compatibles. The Wollongong Integrated Networking Solutions Personal Computer (WIN/PC) software enables PCs to exchange files and communicate in terminal-emulation mode using the Transmission Control Protocol/Internet Protocol (TCP/IP).

Originally developed by the U.S. Department of Defense for use on the Defense Data Network, TCP/IP has become a de

facto communications standard. Under TCP/IP, microcomputers may share files with a variety of remote mini and mainframe hosts, according to Dan Ladermann, Wollongong vice-president for advanced development.

The Link Up card uses Codenoll's Codenoll-3030A, an optical-fiber transceiver that supports the IEEE 802.3 Ethernet standard. The card also supports Open Systems Interconnect standards for high-speed fiber-optic transmission and American National Standards Institute draft standards for Fiber Distributed Data Interface transmission, said Michael Coden, chairman and president of Codenoll.

Coden said fiber-optic cable offers several advantages over coaxial cable media, including greater transmission capacity and immunity to electrical and magnetic interference. This latter trait is important to defense-oriented companies that make up 36% of Wollongong's customer base, Ladermann said.

"We wanted a fiber interface because it provides a lot of flexibility in point-to-point, but also to support internetwork communications," he added.

See **FIRMS** page 33

## MSA integrates software to EDI

By Elisabeth Horwitz

ATLANTA, Ga. — Management Science America, Inc. (MSA) recently announced plans to integrate its mainframe application software with a third-party vendor's electronic data interchange (EDI) translation program. The resulting product will enable suppliers, manufacturers, customers, carriers and other business partners to electronically exchange documents even when their computer systems use different formatting protocols, noted Patrick Tinley, vice-president and general manager of MSA's logistics systems division.

"The EDI industry is expected to grow into a \$1.5 billion industry by 1990," MSA

See **MSA** page 34

## Audix upgrades include messaging, billing, management

By Stanley Gibson

MORRISTOWN, N.J. — AT&T recently announced enhancements to its Audix voice mail system for AT&T's System 85, System 75 and Dimension private branch exchanges.

Called Audix Enhanced, the package provides several new capabilities for voice messaging as well as a billing and management facility that runs on an AT&T PC 6300.

The enhanced system permits users to transfer to another extension after having left a message. Previously, a user had to

See **AUDIX** page 34

### INSIDE

Users request Bell operating companies to disclose details on Open Network Architecture/33

Satellite vendors prepare to launch overseas ISDN links/34

### NEW THIS WEEK

■ Telenet offers electronic messaging for PCs

■ For more on this and other new products, see pp. 63-65.

### INSTANT ANALYSIS

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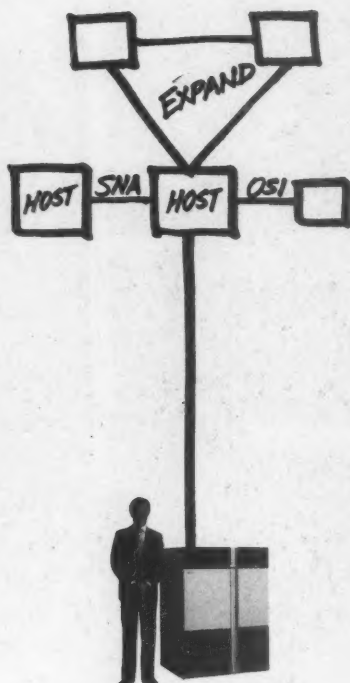
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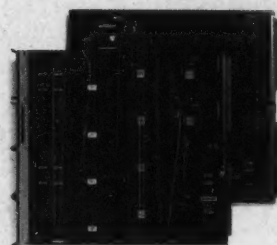
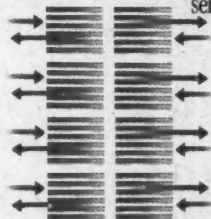
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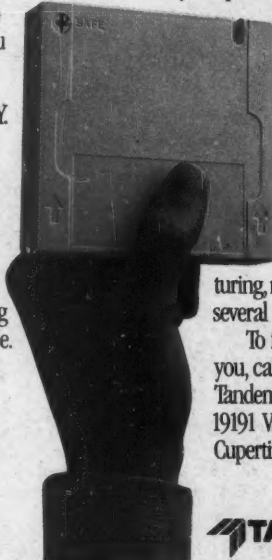
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## COMMUNICATIONS

# Users ask Bellcore for more information on ONA plans

## Say local service options not clear

By Mitch Betts

WASHINGTON, D.C. — Communications users groups recently urged the divested Bell operating companies and Bell Communications Research Corp. (Bellcore) to release more technical details about their plans for Open Network Architecture (ONA).

Without more detailed information, large users will be unable to advise the Bell telephone companies about how to make ONA attractive to users, said Henry D. Levine, attorney for the Committee of Corporate Telecommunications Users and the New York Clearing House Association.

Under Federal Communications Commission policy, the Bell operating companies must submit ONA plans by February 1988 that will make their local networks accessible to enhanced-service vendors and users [CW, May 19].

Users view ONA as an opportunity to purchase unbundled parts of the local

service, but they are also concerned that the seven regional Bell holding companies will come up with incompatible network interfaces [CW, Nov. 3].

### Asked to share plans

In a letter to the Open Network Architecture Forum, a new organization run by Bellcore to gather industry and

user advice about ONA, Levine urged the Bell operating companies to be less tight-lipped about their preliminary ONA plans.

Levine urged the companies to circulate information about the capabilities of the local network, including a list of functions that could be unbundled and separately tariffed, technical standards

that may be used in ONA interfaces and any preliminary or "straw man" architectures being discussed.

At the first meeting of the ONA forum, representatives of the Bell operating companies said they did not disclose such details because all of the Bell companies had not agreed to them and because they did not want to stifle

the discussion.

The next scheduled meeting of the Open Network Architecture Forum is Jan. 27-28 in Orlando, Fla. The first day will be devoted to an overview of the existing local exchange networks, and the second day will be devoted to setting an agenda for the next full-scale forum meeting, expected in March.

# AT&T IS IN SMARTER PROPOSALS.

## Firms unveil fiber-optic link

From page 29

For example, a PC can use Wollongong software and the Codenoll Link Up card to link up to a Digital Equipment Corp. VAX on the same network and then use the VAX as a gateway to a CCITT X.25 packet-switched long-distance network, he said.

A variety of host systems can be linked to an optical-fiber Ethernet network using Codenoll's fiber-optic modem in combination with the Codenoll 3030A fiber-optic Ethernet transceiver, which is priced at \$795, Codenoll said. To the other system, "it looks just like they're talking on any Ethernet link, but over fiber-optic instead of coax," Ladermann said.

The Link Up card will cost \$995 and will be sold by Wollongong. It will be marketed jointly by the two companies.

"It's certainly a good move for both companies," said Dan Lynch, consultant with Advanced Computing Environments in San Jose, Calif. "Wollongong gets some leading-edge equipment to sell, and it gives Codenoll a new market."

The agreement is similar to those Codenoll reached in June with both 3Com Corp. and Sytek, Inc., both of Mountain View, Calif.

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# MICROCOMPUTERS



**MICRO BITS**  
William Zachmann

## Becoming a better writer

**T**he ability to write clearly is a major asset in a business career. Recent studies have shown, however, that the average person's writing skills are woefully inadequate. Even college graduates are often unable to write clearly and concisely.

Rightwriter Version 2.0, a \$95 program for the IBM Personal Computer family and compatibles from Decisionware, Inc., is a useful tool that attacks this very problem. Rightwriter analyzes grammar and writing style and suggests ways to improve them.

Rightwriter is not copy protected. Installation simply requires copying five files to the disk on which you want to keep the program. To start the program, type "RIGHT" at the DOS prompt, followed by an optional input and output file name. If an output file goes unnamed, Rightwriter uses the file name of the input file and appends ".OUT" as the file extension.

The standard output file contains a marked-up copy of the input text and a summary. Comments are added to the text where Rightwriter thinks it might have been written better. The summary includes readability, strength, descriptive and jargon indexes, sentence structure recommendations and an uncommon word list.

The readability index assigns a number to your text giving the grade level of education required to understand it. It uses the Flesch-Kincaid formula used by the Department of Defense to specify readability requirements for

See **BECOMING** page 40

Zachmann is vice-president of research at International Data Corp.

## Baby Blue offers micro compatible with IBM PC

By Douglas Barney

OAKLAND, Calif. — A \$399 IBM Personal Computer-compatible micro was recently announced by Baby Blue Computer Systems, Inc. The company said the personal computer is aimed at inexpensive data entry and networking stations and provides limited expandability.

"It is a closed box," said Bill Russell, president of Baby Blue. The machine comes with an Intel Corp. 8088 microprocessor, one floppy disk drive and a red-green-blue color and composite adapter as well as serial, parallel printer and game ports. There is only one expansion slot inside the computer that can be used for a networking card or for one of the popular hard disk cards, Russell said.

Clock speed is switchable from 4.77 to 8 MHz. A monitor is available from the firm for \$100 but may be purchased less expensively from a computer dealer, according



Baby Blue's IBM PC compatible

to Russell.

For users interested in expanding the machine, Baby Blue will be providing an expansion cage with five expansion slots and its own power supply. The cage will sell for approximately \$400.

## Program allows easy file transfer

By David Bright

ATLANTA — Promoting its product as a low-cost, flexible alternative to an external disk drive, White Crane Systems plans to introduce a utility program early next month for transferring files between laptop computers and IBM Personal Computers.

Because it makes one machine a virtual extension of the other, the Brooklyn Bridge program is less cumbersome than conventional communications software, according to White Crane Systems President Guy Gordon. In addition, the \$129.95 program allows the systems to achieve a transfer throughput rate of 10K byte/sec., Gordon added.

According to Gordon, any laptop computer user with access to a PC will be able to benefit from the program. "Anyone who

See **PROGRAM** page 39

## 3M introduces starter-set system with machine vision

By Eddy Goldberg

ST. PAUL, Minn. — A machine vision system for users interested in a low-cost way of exploring scanning technology for manufacturing applications was introduced recently by 3M Corp.

The 3M Model PC Vision System, available now, is built around an IBM Personal Computer or compatible microcomputer, a Motorola, Inc. 68000 coprocessor, an image digitizer/framestore board and 3M's Vision Development Language (VDL) software.

As an add-on to existing equipment, the system is priced at \$9,950. A complete system, including a microcomputer, monitor and video camera, costs \$14,950.

The VDL software for the Model

See **3M** page 40

### INSIDE

Business directories, telephone listings to be made available on floppy disk/39

### NEW THIS WEEK

- Magnavox offers a multi-graph display card
- Principal Systems introduces document conversion products

■ For more on these and other new products, see pp. 63-65.

### INSTANT ANALYSIS

"Everybody will wait for IBM/Microsoft, or basically IBM, to decide what to do on the 386."

— Bruce Montague, senior software engineer at interconnection, Inc., a subsidiary of Digital Research, Inc., on the confusion in the marketplace on how to tap the power of the Intel Corp. 80386 microprocessor.

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## Oracle launches ALLIANCE program for software VARs

Oracle Corp., supplier of the ORACLE distributed relational DBMS and application development tools, has announced a new program for software value-added resellers dubbed the Oracle Alliance program. The program offers broader markets, simpler, faster selling cycles, and shorter time-to-market for VARs who build or convert their applications to use Oracle's products.

According to Larry Harman, Oracle's Director of the VAR program, "We offer major business benefits to VARs who choose to use ORACLE with their products. Chief among these benefits is ORACLE's portability and the portability of ORACLE-based applications, allowing applications and data to be shared among different machines. Oracle also provides the link software to exchange database information among the different machines."

### Broader VAR Markets

ORACLE runs on the widest array of hardware: IBM mainframes under MVS and VM, most vendors' minis under both proprietary and UNIX operating systems, and PCs under MS/DOS. Oracle also developed SQL/RT, marketed by IBM on the RT PC.

Harman states, "Only with ORACLE can an application developer produce software on one system and inherit a vast market of users of multiple vendors' hardware. Basically, we let our software VARs do blindfold selling."

### "Blindfold Selling"

The company described "blindfold selling" as the ability of a VAR's salesman to walk into an end-user site blindfolded and say, "I don't know what types of hardware you're using, or how many types there are, but my applications run on all of them."

Harman points out that VARs have a tough decision to make concerning what hardware to implement on. With ORACLE, that decision needn't be made. Software VARs who establish a niche in a particular vendor's install base can take advantage of ORACLE's portability to sell in other hardware environments.

### Shorter Time To Market

The company also cited the high level of productivity offered to VARs by Oracle's broad range of application tools, including a forms system, integrated spreadsheet, graphics and other tools. These yield development and maintenance efficiencies that translate into shorter time-to-market and lower costs.

And, Harman adds, "ORACLE is the most complete and mature SQL-based DBMS on the market. SQL is becoming a national standard, so developing applications with an IBM-compatible, portable DBMS makes business sense in both private-sector and public-sector markets."

Harman concludes, "Generous discounts plus support, training and co-marketing combine to make the Alliance program an outstanding opportunity for software VARs."

Oracle Corporation, founded in 1977, builds and markets the ORACLE distributed relational DBMS, 4GL and DSS tools. ORACLE was the first commercial SQL-language DBMS, and is compatible with IBM's DB2 and SQL/DS DBMSs.

ORACLE provides a standard software environment across a wide range of computers and operating systems, including IBM mainframes, minicomputers from DEC, DG, ATT, HP, Stratus, IBM, Apollo and many others, and IBM PCs. ORACLE runs with IBM's MVS and VM/CMS, DEC's VAX/VMS and DG's AOS/VS among others, as well as with UNIX on most systems.

All versions of ORACLE, from the mainframe to the PC implementation, are identical. ORACLE is the only relational DBMS which provides the complete portability of data and applications across a wide variety of systems. Oracle's SQL\*Star architecture links dissimilar systems running ORACLE.

Oracle Corporation markets its products worldwide through 30 direct sales offices, 11 distributors and the Authorized Oracle Dealer network. In addition, ORACLE is sold by numerous hardware manufacturers, including IBM, Honeywell, Sperry, Stratus and Prime.

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For additional information, contact Larry Harman, Director, VAR Marketing, Oracle Corporation, 20 Davis Drive, Belmont, CA 94002 or call 800-345-DBMS.

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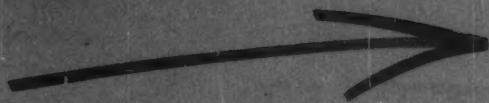
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## MICROCOMPUTERS

## Telephone, business listings to be available on floppy disk

By Peggy Watt

KIRKLAND, Wash. — The first in a series of disk-based common references, eventually to include compact disk/read-only memory (CD-ROM) versions of business directories and telephone listings, is scheduled for introduction this month by General Information, Inc.

The company is scheduled to release Hot Line, a floppy disk condensed version of The National Directory of Addresses and Telephone Numbers, featuring the numbers more than 2,000 of the largest businesses in the U.S. and packaged with a menu-driven search function.

The \$29.95 memory-resident electronic directory, which runs on the IBM Personal Computer and compatible systems, is a taste of larger future implementations that will include the entire directory and other common data bases and reference works, according to Dick Brass, president of General Information.

The complete directory, however, will be sold on larger storage media, such as CD-ROM, hard disks or other optical media, Brass said. Brass not only owns all rights to the 150,000-entry National Directory, which he bought from Whitney Communications Co. in New York, but also holds electronic distribution rights to the World Almanac, published by Scripps-Howard Broadcasting Co.

Brass said he is also negotiating with several regional telephone companies for electronic rights to their telephone listings.

Hot Line is intended to introduce the concept of on-board electronic retrieval of common information, Brass said. It includes an automatic dialer and automatic call log and allows the user to add as many as 65,000 personal telephone numbers. A built-in thesaurus of area codes covers the 3,500 largest U.S. cities and 250 major foreign cities, Brass said.

"We wanted to give people a look at an electronic phone directory," Brass said. "It's not that this is the

most complete or useful data base, but it's a start until CD-ROM. We won't have that for a few years." He said he may release a floppy disk-based version for Apple Computer, Inc.'s Macintosh as well.

Already, Brass has expanded the National Directory to some 400,000 entries. General Information will continue to publish the directory in book form. With directories of telephone numbers, he noted, "We'll have to be versatile. We'll have to update it at least annually." Hot Line will be available by mail order only, directly from General Information.

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## Program allows easy file transfer

From page 35

buys a laptop computer will want to make use of files he or she has already created on a desktop PC," he said. "Also, laptop users will want to upload to the PC files they may have created while at home or on the road."

When a laptop system and a desktop system are linked, the desktop system's drives and attached peripheral devices become available in addition to the laptop system's own drives. The devices can be accessed using the Copy command and other standard Microsoft Corp. MS-DOS commands.

The package reportedly comes with everything needed to transfer files: a 5¼-in. disk for the desktop PC, a 3¼-in. disk for the laptop system and a serial connector cable for linking the two machines.



## MICROCOMPUTERS

## Becoming a better writer

From page 35

contractor manuals.

The strength index aims to measure the strength of delivery of the document's message. Its 0.0 to 1.0 range is based on the use of active voice, short sentences and avoidance of clichés.

The descriptive index gives a relative measure of the use of adjectives and adverbs. The jargon index indicates the degree to which phrases such as, "The acceptability of the corruptibility of the department officials is, public-wise, very negative," are used.

The sentence structure analysis is

essentially a summary of the individual comments inserted in the text. It offers general suggestions based on what Rightwriter believes has been done wrong. The uncommon words list shows words that Rightwriter finds relatively difficult for many readers to understand.

The comments in the marked-up text are inserted wherever the writing violates Rightwriter's rules of good prose. In all, there are 32 types of comments, ranging from identification of basic grammatical errors, such as split infinitives and incorrect verb forms, to stylistic remarks.

Complex and long sentences — more than 22 words — are flagged, as is use of the passive voice. Offensive and legalistic words and phrases and jargon are pointed out. Weak or ambiguous phrases and clichés are marked for correction or omission,

and suggestions are made for replacing relatively complex words with simpler ones.

Rightwriter will work with any ASCII text file produced with an editor or word processor. It will also automatically recognize and translate to ASCII the specific formats of popular word processors, including Microsoft Corp.'s Word, Multimate International Corp.'s Multimate, Micropro International Corp.'s WordStar 2000+, Satellite Software International's Wordperfect and Bruce & James, Program Publishers, Inc.'s Wordvision.

Having run a fair amount of my prose through Rightwriter, I must confess to a certain love/hate relationship with the program. Having material edited is always something of a trying experience. Having it edited by an uppy computer can be

even worse. What right has this thing to tell me my sentences are too long and complex?

Of course, Rightwriter embodies a particular set of assumptions about what constitutes good writing. According to Rightwriter, good writing means short, simple sentences and paragraphs written in the active voice. It means using a limited vocabulary. It also means writing for a 10th-grade level of comprehension.

Rightwriter's notion of uncommon words too difficult for the average reader includes "accessible," "dominates," "profound," "zen" and, not surprisingly, "intellectual." Shakespeare would suffer badly at the hands of the program, as would most of the giants of English literature. As for philosophers, well, one dares not even think about it.

Unfortunately, however, the generally low level, not only of writing but also of reading skills among the general populace, requires a simple, straightforward style for effective communication. The preceding sentence, at 27 words, is flunked by Rightwriter for being too long and too complex.

Which serves to point out one of the best things about Rightwriter: You don't have to follow its suggestions. The text of this column up to the end of the last paragraph, for example, elicited 18 comments that I ignored. The column's strength index is 0.42, and Rightwriter thinks I should make more use of the active voice, shorter sentences and more common words. I also use a great deal of jargon, according to Rightwriter. On the brighter side, however, readers only need a 10th-grade level of education to understand it.

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 HARRIS

## 3M introduces starter-set system

From page 35

PC Vision System is compatible with other 3M vision systems, allowing programs developed on the Model PC version to run on more powerful 3M vision systems if desired.

The PC-based system was designed for first-time vision system users, according to Luke Crofoot, applications engineer for 3M Vision Systems. "It's a great asset to a manufacturing facility — at the end-user or corporate level — to determine if this technology called machine vision is useful for their company," he said.

Crofoot said the system is able to perform the same kind of adaptation a quality control inspector would do on a manufacturing line.

The image digitizer/framestore board transforms analog signals received from the video camera into digital information that is stored in a 512-by-512-by-8-bit memory array and converts it back to digital output for display on a monochrome or red-green-blue monitor. The image can then be manipulated by the user.

The 68000 coprocessor board has 1M byte of memory and a 12.5-MHz clock speed with no wait states. The VDL software moves the image from the digitizer/framestore board to the direct memory address space of the 68000 coprocessor card, where up to 256 different levels of intensity are possible from the gray-scale image generated.

# Executive Report

Edited by Janet Fiderio and Kelly Shea



ILLUSTRATION BY ROB SAUNDERS

## Managing a move

*Prepare for the unexpected, but expect even worse*

By JOANNE KELLEHER

Managing a data facilities move is a lot like running a political campaign, says Don Martineau, assistant director of operations at Ethyl Corp. in Richmond, Va. "It is a very demanding, intensive and egotistical process. And, when it comes time to count the votes, you're either in or you're out."

What is also true of both endeavors is that small slips and seemingly minor details can often make more of a difference in the outcome than the large issues everyone worries about from the start.

And no wonder — during a typical relocation, the MIS manager juggles tasks from new-center construction schedules and electrical system design to fire prevention schematics and selecting a mover. If you add a liberal sprinkling of communications wiring concerns and end-user involvement, it is easy to see how minor details can slip beyond the MIS grasp to reappear months later as the root of a major problem.

Note that one person in most organizations, however, will not lend a sympathetic ear to tales of relocation snags and the ensuing cost overruns

— the chief executive officer. Since this is the case, the key to a successful move is to plan the most minute details and assume nothing. Let redundancy be your byword.

The following general tips from managers and consultants with data center relocation experience will help you prepare for and execute a move.

**Step One. Organize a move team and assign a project manager.** The first step of the manager facing a move should be to create a move team, sometimes called a data center project team or relocation committee. The management and composition of this team is, as might be expected, extremely important. (For a typical data center project team, see chart page 46.) Unfortunately, there is no universal formula for creating a winning team or even for selecting a move manager.

Tom Lalor and Phil Michel, principals in the St. John's Consulting Group in Westfield, N.J., a firm specializing in full-scale data center moves, say that while there is always one individual who functions as the project manager and buck-stopper, there is no single profile by which to describe that individual.

"A manager's first thoughts might be, 'I need a real technical guru,' or 'It has to be the most

***There is probably no situation more suited to Murphy's Law than a data center move. So protect yourself and be prepared for worst-case scenarios.***

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*Kelleher is a Boston-based free-lance writer who specializes in high technology.*

# Move management: Expect the unexpected

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senior person in the department," Lalor says. "But in fact, we've seen a number of people do quite well who've come from a whole variety of different backgrounds." One person he recalls as particularly effective had a background in accounting before moving into data processing in an administrative position.

The one indispensable skill, according to Lalor, is an ability to work well with people in other parts of the organization. In fact, attributes like communication, empathy and understanding are frequently used by project managers themselves when they are asked to describe the requirements of their role.

There are a number of reasons that interpersonal skills rank high on the list of requisites. Ethyl's Don Martineau says he believes that while technical knowledge is necessary to gain the respect of the DP personnel, having a humanistic side is equally vital for preserving loyalty and keeping up morale during the often long and trying process of relocation.

"You have to be sensitive to people's problems and concerns," says Martineau, who managed the recent relocation of Ethyl's corporate computer center from Baton Rouge, La., to a refitted office building in Richmond. "When you are sensitive, you'd be surprised how much employees will sacrifice to ensure a successful move."

William Sharon, hired by E. F. Hutton & Co. in 1984 as project manager for its move to new headquarters, supervised the installation of systems for support of traders and executives and is only half-joking when he mentions the pertinence of his previous career as a psychiatric social worker handling juvenile delinquents.

He is serious about the importance of communication and mediation skills in working with contractors, architects, consultants and vendors. "Developing good communication is very important," he says, "if you want to keep things moving and avoid finger-pointing."

Then too, Sharon says, there is the all-important exchange of information with users. "You have to be able to make the technology understandable to them, but what's even more important, you also have to be able to find out from them exactly what it is that they want to do, so you can design the systems to meet those needs."

In rare instances, representatives of user departments are included in the move team, but more often, observes Tom Rice, a consultant with Com-Site International, Inc., a Beltsville, Md.-based firm specializing in data center design and construction, migration planning and disaster recovery, "They are left hanging without any information or any chance for input."

This exclusion of users is not only unfortunate from the users' point of view, he adds, but also from that of the move planners, who could schedule more intelligently if they sought advice from the people most familiar with work flow patterns.

"I remember one instance," Rice says, "where a city decided to move its data center over the two-week period when real estate tax bills were supposed to go out. All the real estate people kept saying, 'Why didn't they just ask us? We could have told them immediately that it was the worst possible time.'"

**Step Two. Set up an accurate time schedule.** A common mistake of many first-time move managers and upper management is that they do not realize the complexity of a move and so do not set up a realistic schedule. "It's very typical," Lalor says, "for a company to say it wants to move inside of six months when, in fact, given the work required, they'll be lucky to do it in a fast-paced year." (See chart page 44 for a standard relocation schedule.)

Frequently, according to Lalor and Michel, companies fail to consider that they are imposing a tremendous amount of work on an organization that is usually already overburdened; they also overlook the fact that lead times on orders for some kinds of equipment can be extremely long, particularly for networks and certain types of circuitry for voice and data communications.

To avoid slippage in the move schedule or the necessity of accepting less than optimum configurations, Lalor and Michel advise, it is imperative to factor in the order backlog for a number of vital pieces of data center equipment.

For example, lead times required for the delivery of fiber-optic or T1 network circuits vary depending on geography. In some areas, the wait can be 11 months, but in no case is it apt to be fewer than three months.

Managers must remember that time is almost always the enemy in data facility moves. In most cases, the final move comes down to one very hectic weekend — with luck, a long one — during which everything has to test out so that business can resume as usual the next working day.

**Step Three. Be realistic about current and future space requirements.** Why worry about new data center space requirements when managing a move? Because a relocation effort is too time-consuming and costly to repeat every other year. Ideally, before looking at sites, MIS should attempt to determine a realistic projection of anticipated growth. Either an in-house expert or an outside consultant in capacity planning will be of assistance here.

This projection may influence decisions not only about amount and location of space but about the height required for a raised floor, for example. According to Michel, many companies find it less expensive to add a couple of inches to the floor cavity and leave abandoned cables in place than to pull out the cabling after every replacement of a computer or peripheral. It will also give you a chance to include provisions for future upgrades.

John Furmanek, computer operations manager at Akzochemie America, an industrial chemical manufacturer in Chicago, says his company's soon-to-be-completed move into a new, custom-

designed building offered a perfect opportunity for both a network upgrade — to a universal system capable of handling voice and data over twisted-pair cable — and the laying of conduit for local-area networks that may be needed in the future.

"We decided that since the cost of construction labor isn't going down and the process of going back in to lay conduit and run wiring through walls would be disruptive to personnel, we might as well do the whole job right now," Furmanek says.

**Step Four. Be actively involved in site selection.** If move managers frequently exclude users from participating on the move team, they in turn are often left out of an important part of the relocation decision-making process — site selection. Improper site selection can needlessly complicate a move and cripple the future growth of the new data center.

The unique requirements of a computer facility — environment, special configurations, security and so on — are not likely to be understood by real estate departments or facility managers.

Unless there is some opportunity for these requirements to be addressed before a site is selected or designs are rendered for construction of a new building, the move manager may have to make some unfortunate compromises or costly revisions.

Gary Durica, systems engineer, and Earl Seiler, systems manager for in-house computers, work at Union Switch and Signal, a Pittsburgh supplier of transportation control systems.

They agree that many of the problems they encountered in moving the company's data center could have been avoided if they had had some input into the site selection and a hand in dealing with contractors.

The new building that Union Switch and Signal moved into is a typical five-story office building not really designed for housing a typical computer center — let

Continued on next page

## Expert's Opinion

# How to plan a relocation

By WILLIAM K. SEIFERT

Planning a data center move presents the ultimate challenge to the MIS director. At first glance, it may seem impossible to develop a plan that is comprehensive and flexible and still gets the job done.



Seifert

But with a well-organized, thorough approach, it can be done — with a minimum of snafus. The ultimate success of the plan, and the planner, is best measured by how well the execution of the move satisfies the goals of the corporate bigwigs.

Every move, from relocating a chair to relocating a data center, has three distinct phases — decision, preparation and action. **Decision.** The first phase is twofold: coming to the conclusion that the move is necessary and setting clear objectives for the move.

Corporate management will likely present its priorities to MIS in ranked order, such as keep the total cost low, do it as quickly as possible, maintain continuous service to the system's users, replace and upgrade hardware and ensure that the facilities for personnel and equipment will accommodate expansion. Then the MIS manager, now the relocation project manager, must determine the best way to achieve those objectives.

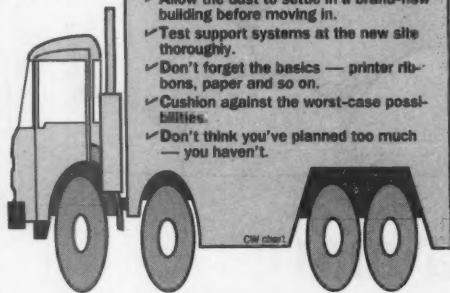
Unless your company owns or has access to a backup hot site to which you can transfer all of your data processing work load while you move, there are only three basic methods of getting your DP operations from Point A to Point B:

- One method is to pull the plugs on the equipment, move everything to the new facility, reinstall, test and, hopefully, resume production. This is the best approach for a small DP installation that is moving a short distance.
- The opposite end of the spectrum involves installing the latest technology in computing and communications hardware and software at the new facility and running it parallel to the old site until all of the bugs are ironed out and production can be confidently switched to the new site.
- This method is the most progressive and also the most expensive.
- The third option, usually considered a compromise, is to move in a piecemeal fashion — that is,

Seifert is a consulting associate with Total Assets Protection, Inc., a consulting firm based in Arlington, Texas.

## MOVING DAY TIPS

- ✓ Be in constant touch with the moving company; know the van's route.
- ✓ Allow for weather extremes — heat, cold, humidity, rain, snow.
- ✓ Allow the dust to settle in a brand-new building before moving in.
- ✓ Test support systems at the new site thoroughly.
- ✓ Don't forget the basics — printer ribbons, paper and so on.
- ✓ Cushion against the worst-case possibilities.
- ✓ Don't think you've planned too much — you haven't.





## Executive Report/Managing a Move

transferring one or a group of hardware components, communications circuits or a complete subsystem to the new facility and installing and testing it, often with prepositioned duplicate hardware.

In fact, when all systems will be identical at the new center, this hardware should be exactly the same as that in use at the old facility and is usually exchanged, rented or borrowed from the vendor.

After transfer, production responsibility is switched to the new site for that segment of the DP operation, while the remainder continues to run at the old facility. This procedure is repeated until each element of the system has been relocated.

This compromise method is the most viable option for a very large DP operation with multiple mainframes and divisible systems and heavy batch and on-line telecommunications commitments.

Some variation or a combination of the three methods can be tailored to suit any company's objectives.

After deciding what method to use, the relative importance of two resources — time and money — should be considered.

For example, requirements of lead time to order critical items, man-hours to perform the entire relocation as well as identification of the optimum time — a long weekend, a slower period during the year — for completion of certain steps need to be determined. In addition, all costs directly attributable to the relocation should be estimated and provided to management for budgetary approval.

**Preparation.** Once the strategy has been settled on, the most critical aspect of the relocation plan can be developed — setting up a committee to organize the move. Every department that will participate in or be affected by the data center move should have a representative on the relocation committee.

This group will prepare a detailed, chronological plan for moving each of the data center components; implement a comprehensive test and acceptance plan; and develop an all-encompassing contingency plan to handle unpredictable foul-ups.

The committee will also identify, assign and develop procedures to track and report on the status of all facilities, equipment, communications, furnishings and personnel that will be involved in performing the move.

**Action.** The final phase of a relocation is, simply, the implementation of the various plans. When all of the premove actions are complete, a freeze that covers all program development and modification and all data inputs and updates should be put into effect. This will synchronize all data bases for the duration of the relocation.

Now comes the execution of the move, leading to switching DP operations from the old installation to the new one. Then all that remains is to settle in with the new operating, distribution and security procedures that you have written; return the excess, rented or borrowed equipment; and turn out the lights in the old installation.

## Continued from previous page

alone the special requirements of one in which the equipment population is composed in part of a constantly changing collection of customer systems.

Because ceiling clearances there are not the 12 to 14 feet required by the large control boards used by operators at customer sites, the equipment can no longer be moved into and tested in the computer facility. "Now," Durica says, "these units must be tested at the factory."

Although the space allotted to the computer facility is adequate to house the current equipment, there is no room to spare, Seiler says, and no options for expansion — "except the ladies' rest room or the janitor's closet. Since there wasn't much choice, and based on the assumption

that systems seemed generally to be getting smaller, this configuration initially seemed, if not ideal, then livable."

Now, however, Seiler has learned that space will soon have to be found for a number of Digital Equipment Corp. VAX 8500s and 8200s, which are substantially larger than the VAX units currently in place.

Lalor and Michel of the St. John's Consulting Group are adamant about the necessity of data center management involvement in site evaluation. In fact, the firm has developed an extensive list of site evaluation criteria specific to the peculiar needs of data centers. Among the major questions that every move manager should ask are the following:

- Is the potential site located in an area undergoing heavy develop-

ment? If so, the risks of power and communications interruptions are higher.

- Do area zoning restrictions prohibit running generators at night?
- Is the area fire department experienced in dealing with Halon systems?

- Are adequate area services available for transportation, parking and food to meet the needs of data center personnel, especially the off-hours shifts?

- Will MIS have control over the building and any adjoining tenants so that telecommunications closets and power lines can be secured?

- Is the space flexible enough to permit expansion if necessary?

- Does the configuration of space suit the power and environmental needs of a computer center? For



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## Executive Report/Managing a Move

JEFF BABINEAU

example, consider these troublesome scenarios: Spaces that wrap around a central core may cause difficulties with cable length; a long thin space may not provide sufficient air movement for the heating, ventilation and air-conditioning (HVAC) systems; an excess of exterior walls may affect the HVAC system; and buildings without traditional corners may cut down on computer space.

- Is there sufficient ramping space available to permit the desired floor cavity? Occupational Safety and Health Administration rules require one foot of length per inch of rise.

- Is the floor load capacity sufficient? When dealing with rental space, it is wise to have the figure either confirmed by a structural engineer or guaranteed in the lease agreement, since structural changes that would lower the capacity may have taken place since the original construction.

- Is the site an area of urban renewal? If so, cable-eating rodents may be a problem.

- Are there other business tenants in the building that are undesirable neighbors for a computer center? Two hazardous neighbors, for example, are cafeterias, which might have kitchen fires, and microfiche manufacturers/developers, which use developing fluids and exhaust gases.

**Step Five. Expect the unexpected and make friends in high places.** In the course of any move, managers are faced with a number of unusual and unexpected problems. The smartest way to deal with relocation snags is

to anticipate and plan for as many of these disasters as possible.

But it is also smart to make influential vendor contacts so that in an emergency, a well-placed phone call might get you out of a bind. Think of contacts in vendor firms as insurance policies — in the case of a disaster, chances are you will be covered.

For the Electronic Systems Division of Garrett Airesearch in Tucson, Ariz., one small stray piece of wire was all it took to throw plans for a weekend transfer of its computer operations right into Tuesday of the next week.

"We lost a whole day," says Vern Coonze, manager of computer and communications services, "just because one little piece of wire came loose during the move and

"

*'We lost a whole day just because one little piece of wire came loose during the move and got tangled up in a fan.'*

— Vern Coonze  
Electronic Systems Division  
Garrett Airesearch

got tangled up in a fan."

The only saving grace in this situation, according to Coonze, was that although normal operations were disrupted, the organization was spared the additional injury of overtime charges from the computer vendor who was handling the installation of equipment.

"The bill probably would have been at least a third more than it was," he says, "if we hadn't negotiated for a fixed price on the job up front, instead of agreeing to pay on the basis of time and materials."

Although he was still able to finish with a comfortable margin, Ethyl's Martineau also experienced a couple of brushes with the unexpected. Given a six-month timetable and depending entirely on existing staff resources, he and his team were able to ready the new space, create a duplicate communications facility with 32 dedicated communications lines and install and test an IBM 3081 Model D computer with five banks of IBM 3380 disks, seven tape drives, a card reader/punch and three printers — with a week to spare.

Of all the things that could have gone wrong in this complicated process, the only two glitches of any note, according to Martineau, were difficulties with some applications software that had not been reprogrammed for the time zone change and a strike at AT&T.

Since Ethyl's move team had factored in a full week for testing of application software, there was ample time to locate and remedy the first problem. AT&T's labor problems, coming as they did without warning and just when Ethyl needed its communications equipment installed, could have taken a heavy toll on the move schedule, however.

The reason it did not was that Martineau had taken the precaution of establishing close contacts in the higher management echelons of each vendor company. That extra effort made the difference in this case, he says. "Because we had those highly placed connections, supervisory personnel came out to the site at night and installed some circuits for us."

**Step Six. Assume nothing, document everything and remember the need for redundancy.** Clear documentation, records and fallback plans are invaluable during a move.

Sally Gonzales, information systems director at Hogan and Hartson, a Washington, D.C.-based law firm, is planning a combined move and expansion of information systems as part of a company shift into a new building.

Gonzales has already seen enough — both during the early stages of this move and during previous setups of the two branch offices — to convince her that absolutely nothing can be assumed and that the only protection against damaging surprises comes from having multiple fallbacks.

## MACRO SCHEDULE FOR MOVING A DATA CENTER

Month	Activity	CALENDAR: Month 21												
One to three	Site, structural and space planning.	1	2	3	4	5	6							
Four to six	Functional area design.													
Seven to 12	Equipment specification, vendor analysis, purchase order preparation.	7	8	9	10	11	12	13						
13 to 18	Construction monitoring, installation of building facilities.	14	15	16	17	18	19	20						
19 to 21	Preparation for move, receipt and installation of purchased equipment, relocation and start-up.	21	22	23	24	25	26	27						
		28	29	30	31									

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"Assume" is one word that I've learned to take out of my vocabulary," Gonzales says, relating an experience she had while one of the branch offices was under construction.

"The move-in date on the Bethesda [Md.] office was postponed twice because of construction delays," she recalls; on one of those occasions, despite a written change order and two rounds of follow-up calls to the telephone company, phone service was switched over to the unfinished location.

"Luckily," Gonzales adds, "we had done all the paperwork and documented everything, so we didn't have to pay for the mistake as well as put up with the disruption."

Keeping that lesson in mind, Gonzales has made redundancy a basic tenet of her move management philosophy.

She not only keeps notebooks full of information and

memos for each project area involved in a move, but also maintains a diary record of all her phone conversations.

**Step Seven. Create a safety net.**

The same cautious, layered approach is also apparent in Gonzales's planning. At every critical juncture, she explains — "every point where the ball is passed, and there's some danger that it will be dropped" — she tries to insert some kind of safety net.

Two such contingency backups have already been used during the current move process.

Gonzales was eager to leave herself some maneuvering room when asked to specify her space requirements for a computer room. "Before the building was even a hole in the ground," Gonzales says, she hedged her best guess by placing the facility next to an easily relocatable department. That

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## Firm maps out long-range plans with data center blueprint

Getting a head start is critical to a smooth data center move. Yet many companies leave themselves barely enough time for even the fundamentals of planning before launching into the action phases of a move. Not so at one well-prepared manufacturing firm, which has design layouts and cost estimates in hand for a facility it has no immediate plans to build.

Rosemount, Inc., located in Eden Prairie, Minn., builds high-tech instrumentation for aerospace and industrial applications. Last June, the company commissioned Comdisco Data Center Development, Inc. in Chicago to interview the staffs of its several computer and communications groups and to come up with a plan for consolidating these functions both operationally and physically. "We wanted a plan outlining how we could do it and what it would cost, along with a needs projection for the next three to five years and some detailed recommendations about facility requirements," says Bob Smith, Rosemount's data center manager.

"The idea was that if we were to decide to build a corporate headquarters, which we thought we might want to do in the next couple of years, this report would be something that we could just turn over to the facilities manager," Smith adds.

Comdisco was instructed to approach the project exactly as if a move were in the offing. What Rosemount wanted — and got — was a theoretical but realistic "blueprint" for a consolidated facility, complete with cost estimates. The entire process, from research on the specifications of all existing equipment through delivery of a finished layout, took about a month and, according to Smith, carried a price tag of about \$10,000.

What prompted this exercise? As Smith explains, it was part of an attempt to create a coordinated information management structure to support the strong growth that Rosemount has been experiencing. "Just within the past year, the company appointed a chief information officer," Smith says. That meant that for the first time, information systems departments previously operating as distinct entities and without any acquaintance had a common point of reference.

The chief information officer came up with the idea for a facility plan soon after taking the helm, Smith says, but it languished on the back burner while the information systems managers attended to more pressing tasks. "We just seemed to have a very hard time getting the process moving ourselves," Smith adds, explaining why an outside consultant was retained for an essentially theoretical analysis.

Indeed, an outsider was able to cast a fresh eye on Rosemount's data center needs. For example, the report drew attention to design options that could reduce operating costs. "Comdisco told us that we might want to consider putting the lighting on a separate circuit," Smith says, "so that we could turn off lights in areas

where they weren't needed. Since lights generate heat that must be offset by air-conditioning, the power savings could be significant."

It is a minor point, but a number of such details incorporated into the design of a computer center can add up to considerable long-term savings, according to Al Erickson, the Comdisco project manager assigned to work with Rosemount. Unfortunately, he says, companies seldom allow themselves the luxury of time for consideration of such specifics.

"It doesn't cost anything to try things out or make changes on paper," Erickson says, "but by the time that most companies come to us,

about 75% of their attention is already being devoted to the actual move." He notes, however, that the Rosemount report did not include details on the move itself, since the new site had yet to be determined.

In addition to gaining new perspective from the consultants, Smith says, Rosemount was able to gain a quick education in the state of the art of computer room design. "It has been nine years since the central data center here was built," he says, "and obviously there have been quite a few advances since then."

In fact, several of the consulting firm's suggestions came as real revelations, according to Smith. For ex-

ample, Comdisco's recommendation for the depth of cavity under a raised floor was a minimum of 15 to 18 inches, compared with the 9-inch rise in Rosemount's current data center. "They also talked to us about the importance of locking the floor grids together to provide greater strength. Until then, I hadn't realized that the pedestals supporting a raised floor can actually fall over," Smith says.

The existence of water sensors that could be installed under raised flooring was also news to him, Smith admits. "Right now, if there were any kind of a leak, we could be in very big trouble."

— JOANNE KELLEHER

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Continued from page 44

precaution has already proved necessary, as the firm has now committed to the acquisition of an additional Wang Laboratories, Inc. VS 300. "It's a good thing we left ourselves that option," Gonzales says, "because we would have had to knock down a wall within six months."

In the second instance, although it had been planned that direct point-to-point wiring would be used for workstation connections, Gonzales says, in thinking of future needs, she had also inserted many of the requirements for a Wang Fastlan into her specs for the new location.

As it turned out, although everyone, including Wang, had been quite sure that point-to-point wiring would work, a slight adjustment in the positioning of the cable trays to accommodate a new arrangement of columns threw off everyone's calculations.

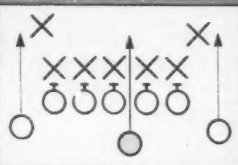
"When Wang did the testing," Gonzales says, "they found that there was a problem with cross-talk, so we had to scrap the approach and go directly to the network." Fortunately, since the necessary equipment had already been ordered, Wang only had to move up delivery by eight to 10 weeks.

Two other safeguards implanted in the move process at perceived points of vulnerability may or may not prove to be necessary to the law firm.

First, aware that even the most careful packing might not be enough to prevent damage to fragile computer components and concerned that the local service organization would not have an adequate supply of spare parts on hand, Gonzales requested a list of critical parts from Wang and then obtained a commitment that the company would make a stock of spares available at the

JEFF BABINEAU

## PLANNING THE MOVE: THE DATA CENTER PROJECT TEAM



- Project manager
- Team administrative assistant
- Architectural space planners
- Equipment vendor representatives
- Utility company representatives
- Data center department representatives
  - Technical services
  - Operations
  - Data entry/data control
- Construction company representatives
  - Electrical coordinators
  - Heating, ventilation and air-conditioning technicians
  - Special equipment coordinators
- Insurance and audit department representatives

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*It is smart to make influential vendor contacts so that in an emergency, a well-placed phone call might get you out of a bind. Think of contacts in vendor firms as insurance policies — in the case of a disaster, chances are you will be covered.*

time of the move.

Finally, Gonzales decided to minimize Hogan and Hartson's risk exposure by staggering the transfer of equipment.

"We'll be moving one of our systems over a week in advance of the other," Gonzales says. "At least that way, if one is totally destroyed in the move, we won't be left without

some fallback."

**Step Eight. Get outside help if you need it — vendors or consultants can play a role.** Keeping an eye on all the deadlines involved in a data center move while interacting with several vendors, monitoring the activities of architects and building contractors and planning the details of the final physical transfer can be

a truly daunting task. Move managers employ a variety of techniques to help them oversee this process.

Some employ specialized consulting firms to handle portions of the job, such as compiling a premove plan (see story page 45), coordinating the design and construction of the data center, planning and installing the network or performing the actual move.

Even if managers prefer not to contract out any of the work to consultants, they tend to rely heavily on hardware vendors for all kinds of assistance, ranging from advice and early warnings about compatibility problems to the actual move and reinstallation of equipment.

"I believe in getting your hardware vendors involved in the process

Continued on next page

# MAKE YOUR FOCUS RAMIS.

## Executive Report/Managing a Move

## There's no immunity from Murphy's Law

If Murphy's Law applies to anything, it applies to moving a data center. If anything can go awry during a relocation, it probably will. Even with a well-laid plan, the unforeseen may crop up.

What can possibly go wrong? The following are actual difficulties that have been encountered during various data center relocations:

- The company experiences an economic downturn, and the budget for the relocation is drastically reduced two months before the sched-

uled move.

- The new facility is not finished on schedule.

- The vendor will not allow his equipment to be installed in the new facility because the power and chilled water do not meet his specifications.

- The local government inspectors will not allow the placement of any equipment until they have issued a Certificate of Beneficial Occupancy.

- The relocation project manager is transferred and is not replaced.

- The only person available at the new facility is the security guard, who accepts delivery of DP equipment without notifying anyone.

- A device will not fit into the elevator and must be removed through a window using the only available high-lift crane. The crane malfunctions.

- A primary circuit breaker for computer room overhead lighting fails during the move, and there is no electrician available who can repair it.

- A moving van carrying both of

the company's CPUs is disabled at a railroad crossing and is struck by a train.

- A moving van carrying the company's entire tape library catches on fire.

Did any of these incidents affect the company's data processing service? Yes. Could most of them have been prevented by more thoughtful planning? Probably. Can you think of everything bad that could happen and try to prevent it? Probably not. Should you try? Definitely.

— WILLIAM K. SEIFERT

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### Relational Views.

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- ✓ Concurrent multi-user updating
- ✓ Compiled development language
- ✓ Relational data views
- ✓ Advanced reporting features
- ✓ PC workstation capabilities
- ✓ Reliable support

### Flexible Reporting.

The advanced menu-based architecture lets each user choose the reporting style that best suits their skill and requirements. The RAMIS Information System offers four reporting options: artificial intelligence-based natural language, menu-assistance, checklist or syntax.

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nance and customized reporting are done easily and quickly through pop-up windows. A direct link to mainframe RAMIS, along with a relational PC data base manager, lets end-users access, store and maintain data at their own PC workstation. So, they can work more productively.

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Continued from page 46

from the very start," says Norman Lansing, data center manager at TIE/Communications in Shelton, Conn. Lansing has been building and moving data centers for 20 years and, recently, was faced with the task of upgrading his company's headquarters data center to accommodate the centralization of several scattered data operations.

It was thanks to the fact that Lansing turned to his hardware vendors as soon as he got word of the consolidation plan, he says, that he had six months' warning of the fact that the new IBM 4381 he had decided to install would require the installation of a new version of the VM operating system.

Union Switch and Signal took vendor involvement a step further and contracted with DEC for its Decmove

”

*'I was afraid that if we went out and got a mover ourselves and then a processor or a tape drive fell off the truck, it would take weeks to get a replacement.'*

— Gary Durica  
Union Switch and Signal

service to handle the entire moving process for all large equipment.

Even though the systems staff at Union Switch was fully capable of performing the installation and, in fact, does this job routinely for customers, there were several compelling reasons for entrusting the responsibility to the vendor, according to Durica.

"It was a major boost in confidence for us to have DEC handle the move of our larger systems," he says, explaining that the staff did transfer some small equipment themselves.

"When it came to the larger systems, we felt that using DEC gave us an extra measure of safety. They had movers they'd worked with before who were used to transferring this kind of equipment," Durica says.

Besides, he adds, as the responsible party, DEC would be good for any damage in terms of guaranteeing

Continued on page 50

**RAMIS Information System.**  
*The 4GL Information Center Tool for Data Base Management and Applications Development.*

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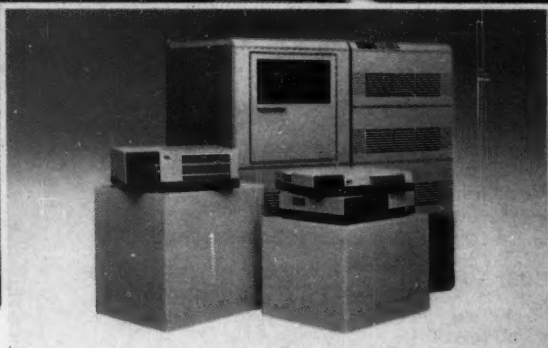
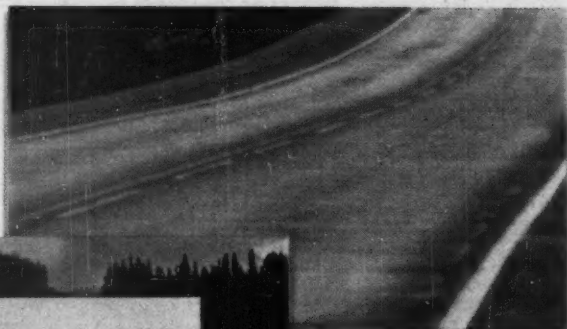
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**3B2 XM.** Expansion Module adds 23MB cartridge tape storage and/or 30 to 72MB hard disk storage.

**3B15.** Serves 16 to 60 users, 128 RS232C ports. Speed: 1.6 MIPS. Supports 8 drives, with maximum storage of 2.7 gigabytes.

Not shown: Other members of AT&T's 3B computer family serve up to 100 users, across a wide range of business needs and environmental conditions.





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**AT&T**

The right choice.

## Executive Report/Managing a Move

Continued from page 47

quick replacement. "I was afraid that if we went out and got a mover ourselves and then a processor or a tape drive fell off the truck, it would probably take weeks and weeks to get a replacement."

**Step Nine. Be prepared for the move day.** There are a number of things that a move manager can do to make sure that a moving day proceeds smoothly.

Assuming that you are handling the actual move yourself, you will want to exercise care in the selection of the moving firm.

The company chosen should have some experience in moving delicate equipment, and, if possible, you may want to do what John Furmanek of Akzochemie America did and engage a mover who has moved other com-

panies into the same building.

"I worked with the office services manager to evaluate moving companies in terms of price and insurance offerings. Since most of them were roughly comparable, we decided to go with one who knew the building and was familiar with details like the layout of the loading dock and the location of elevators," Furmanek explains.

”

***If the timing of the move requires that the computer equipment be subjected to extremes in temperature, you may have to allow some extra time for both transfer and installation.***

Finding a mover with such specific previous experience is not always possible, of course. You may have to assume the responsibility for learning and communicating the necessary information to the movers.

What you want to avoid, says Lansing, is a situation he once ran into in a New Jersey site where he was installing a data center. "We got the equipment up the elevator, but

then we couldn't get it around the turn into the corridor."

If you are moving long distance, it would be a good idea to consult with the moving company about possible dangers to magnetic media from sensing devices.

According to Michel of the St. John's Consulting Group, monitoring devices for checking load densities of large vehicles are becoming an increasingly common feature of the landscape and should be taken into account when transport routes are being plotted.

You will be able to greet the moving vans with an easier mind if you have provided yourself with adequate insurance. Extra coverage can be purchased either through the regular company insurer or through the moving company.

Furmanek at Akzochemie also suggests another important rule: Factor the weather into your plans. If the timing of the move requires that the computer equipment be subjected to extremes in temperature, you may have to allow some extra time for both transfer and installation.

"We are going to have to move at a very cold time of the year," Furmanek says, "so what we've done is work out a plan for shutting down our equipment Friday morning to give it time to cool down before it is moved to the new site."

Equally important, whatever the weather, according to Lalor of St. John's Consulting Group, is making sure that all support systems have been adequately tested before computers are hooked up and turned on. "It can be problematic to try to do that kind of testing after the computers have been turned on," he says. "With modern machines, any stop or drop in power can easily damage circuitry."

It is also advisable, when dealing with a new building or recently completed construction, to try to allow a couple of days for the dust to settle — literally — before moving in valuable equipment.

Union Switch and Signal did not have that luxury, according to Seiler. After delaying the move several times because of construction hold-ups, the company finally had to move in while dry walls were still being sanded. Although repeated damp-mopping and vacuuming prevented any major damage, it was still a worrisome several days before the cloud subsided.

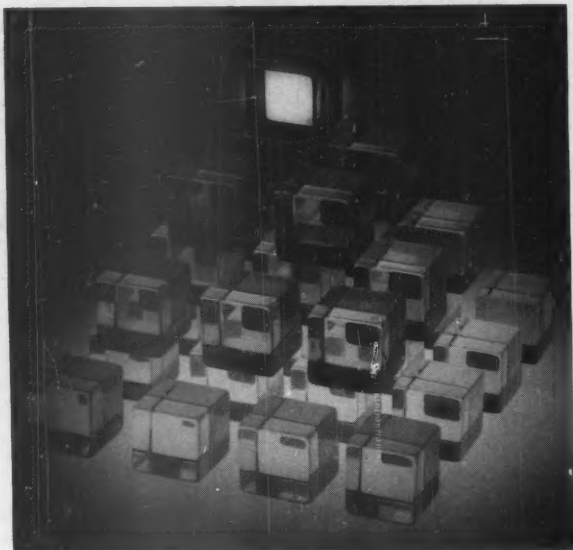
Keeping in mind that there is probably no situation more ideally suited to Murphy's Law than a data center move, it is always wise to provide yourself with a cushion against worst-case scenarios (see story page 47).

For example, most veterans of such moves advise staggering the move as much as possible — by leasing duplicate equipment if financially possible, by moving equipment in batches whenever operationally feasible and always creating tape backups.

Finally, remembering that it is often the smallest of details that derails this kind of massive project, Lansing of TIE/Communications advises, "Make sure to get in touch with a local vendor for basic supplies like ribbons and paper. You don't want to throw off your whole schedule at the end just because you've forgotten printer ribbons."

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## In Depth

# Beyond monitoring

## MIS can actively manage system performance

By MERV ADRIAN

*Distributed processing implies distributed performance problems • System tuning can predict the unpredictable • Will expert systems make good performance managers?*

IBM's recent introduction of the 9370 series of 370-compatible computers raised many issues for systems managers, but chances are that tuning and performance were not among them. However, these announcements are likely to have a significant impact on performance and performance management.

Consider this: Today an end-user department in a large corporation may have several dedicated systems designed, implemented and supported by corporate systems staff, including systems analysts and applications programmers. There may be a relatively technical lead programmer/analyst, and possibly an applications programming staff, in the end-user department itself.

Even if that is the case, however, it is unusual for those analysts to be skilled at systems-level tasks. Many of these analysts have never even seen a central console, and the skills involved in keeping a computer system up and running are probably not in their repertoires. If that department is highly profitable or politically favored within the organization, it is likely that the new IBM machine will become a very plausible purchase, one that will enable the department to run MVS locally and move applications off the central corporate machine.

But what if there are performance problems or unanticipated systems difficulties? Unless an effort has been made to introduce performance management skills at the level at which that machine is to be supported, who is going to manage the system? As Aubrey Chernik, president of Los Angeles-based Candle Corp., a leading vendor in the performance monitoring field, noted on the day of the IBM introductions, "Distrib-

uted processing implies distributed performance problems."

In this discussion, we will look at the current state of performance management tools. These products glean every usable piece of performance data from a system so managers can take into account nonlinear variables and forestall problems before they become critical. The DP manager can move beyond the monitoring of the predictable into the measurement and prediction of the unpredictable.

### Goals of performance management

The goals of performance managers vary from shop to shop and industry to industry. Nevertheless, certain common goals apply to all:

- Minimizing risks.
- Maximizing productivity.
- Handling problems.
- Balancing demand with resources.

Minimizing the risks is a favorite goal of managers everywhere; in the computer business the risks are enormous, as are the budgets. Obsolescence, the critical nature of adequate capacity and the importance of rapid response for managers combine to put the DP manager in a very high-pressure environment. Add to this the volatility of the DP environment: Pipes may burst, electricity may become unreliable, turnover is high. . . . We could go on and on.

The role that performance management software plays here is to introduce stability into the technical environment wherever possible.

Protecting the investment in expensive hardware means seeing that the investment is not wasted. Jobs that read the same tape five times instead of copying the files to disk first, low-speed channels connecting high-speed devices and memory allocations so small that they cripple the applications running — these all squander the resources of the enterprise just as surely as inadequate quality control in manufacturing or empty seats in the airline industry.

In most cases, a cost per CPU minute of \$50 would be considered a fair average. The improvement of a daily run from 12 minutes to eight would save \$60,000 a year. In fact, most of the vendors represented here claim that improvements much better than 33% will usually be achieved.

Minimizing new investment is equally critical. Firms have bought new CPUs, when all they needed were more direct-access storage devices (DASD) and a better batch scheduler, and new tape systems, when all they needed was a library staff that worked. Putting off the purchase decision on a major piece of hardware for three or four months "can result in hundreds of



### About the author

Adrian is a project team leader with Shearson Lehman Brothers, Inc. in New York. He is chairman of the micro-to-mainframe Special Interest Group of the New York PC Users Group.



## In Depth/Performance Management Tools

thousands of dollars in savings," points out the product literature of Sunnyvale, Calif.-based Boole & Babbage, Inc., the vendors of Total System Analyzer/Problem Program Evaluator (TSA/PPE).

Maximizing productivity is another common goal and a topic that is sure to win the hearts of managers anywhere. There are several specific areas in which these products can help.

By tuning large systems and thereby permitting an increased work load, DP managers are getting a bigger bang for the buck. To the degree that the applications at the margin are useful or politically popular, these managers can lay claim to being resourceful contributors to the firm at minimal expense.

In addition, better response time, of course, means faster turnaround for critical reports. Improved response time also facilitates the increasing use of on-line systems for managerial queries and the monitoring of critical business concerns. The ability to use information as a strategic tool — a favorite MIS topic today — can hinge on just this kind of access to data.

Greater programmer productivity naturally results from increased up-time and improved response time, but there are peripheral benefits as well. The organization that begins to take optimization seriously involves its programming staff, improving the staff's skills in the process. Learning to make applications efficient is rarely a topic in college programming course work; if the work environment does not stress these issues, programmers never really get a feel for the techniques or their significance.

#### Minimizing crisis mentality

Problem handling is often the easiest understood of the performance management goals. In many shops, it is commonplace to go from crisis to crisis without identifying basic difficulties because the organization lacks the time and personnel to take a more proactive role. Even at this rudimentary stage, though, some useful tasks are performed.

Then again, identifying critical difficulties is not as easy as one might think. The reason for long response times, for example, could range from application design problems within the particular user's programs to major system problems. Thus, one of the critical goals of performance management is simply to get a handle on where the causes of problems are.

Resolution of the problem, once identified, may not be simple either. Even if unlimited funds are available, design changes tend to cascade through a system. Constructing alternate models is a highly useful capability here.

Prevention of recurring problems is a hoped-for result of modeling. Adequately factoring in the future, of course, means having a solid platform of information on which to build. Typically, a data base of performance measurement over time will provide the means to accomplish this through capacity, configuration and network planning.

The last goal — balancing demand and resources — is the classic tuning issue that comes to mind when performance is discussed, because resources are often a given. Tuning can consist of applications tuning or sys-

tem tuning.

Application tuning can reduce the resources demanded by existing applications through various optimization techniques. Strobe, from Programart in Cambridge, Mass., discussed later, is an excellent example of this sort of product.

System tuning simply assures that the installed hardware and systems software are configured to maximize the availability of resources. The

more technical issues involved here require the use of sophisticated products like Boole & Babbage's TSA/PPE.

#### Monitoring software

The measurement of past and current performance is implemented through the installation of monitoring software. In the IBM world, these products often utilize the records created by Systems Management Fa-

cility (SMF) and Resource Management Facility (RMF). A typical monitoring approach is to sample events selectively, storing them either in SMF or RMF data sets or in the vendor's proprietary files.

SMF focuses on the physical configuration itself and hardware events with an eye toward the execution of jobs in a batch environment. It creates records of hardware events including initial program loads (IPL), equipment errors and downtime, device and channel loading, allocated but unused DASDs, data set activity and more.

IBM initially provided little in the way of reporting facilities, suggesting that users would instead develop their own — a significant business opportunity not ignored by other vendors. By providing a standard format for this kind of audit trail,

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## In Depth/Performance Management Tools

IBM in effect created a standard for the aftermarket vendors, many of which cut their own records with the same or additional record types for further analysis by their own software.

IBM's RMF focuses on the entire system's functioning under load. It can create as well as read SMF records and contains more extensive reporting capabilities. Such issues as contention for devices, work flow and storage usage are covered.

RMF is available in several increasing levels of sophistication, culminating in Level 3.5 with graphics support via Graphical Data Display Manager, integration with ISPF and an impressive list of available reports.

At the very least, a monitoring product should be able to report on its own resource utilization. It may

involve significant CPU overhead that invalidates other results if not understood.

### Sampling and analysis

The degree of frequency with which a monitor samples data may vary. Boole & Babbage's TSA/PPE has two settings, both of which may be used simultaneously.

The continuous performance measurement (CPM) mode runs up to 24 hours a day at a low sampling rate, writing SMF records that are later analyzed. Interim performance measurement permits intensive sampling of specific areas of system activity during peak or other significant periods.

Capture/MVS and Capture/VM from BGS Systems, Inc. in Waltham, Mass., are data collection and analysis products that can analyze RMF

and SMF measurement data and generate summarized performance reports.

By combining both SMF and RMF data, as BGS states in its product literature, Capture is able "to relate job service requirements [SMF] to systemwide performance [RMF]... to give you a more complete characterization of how all resources, including overhead, are used." The information is automatically profiled by time.

Candle's Omegamon can lay claim to being the first real-time performance management, as opposed to monitoring, software. Since 1977, Omegamon has been extended into multiple environments, including versions for IBM's IMS and CICS.

Candle's approach to the products is to begin with exception analysis and make the problems leap out of

the screen. Then it proceeds to service-level analysis to see if the users are getting what they need. If not, it moves on to bottleneck analysis to determine the specific problem and finally to resource analysis to ascertain its cause.

For a long time, user interfaces were not a serious area of development in the performance monitor market. The users of these products were believed to be the most highly technical users in an organization and to not need to have their hands held too much.

But as Candle's Chernik points out, "It's difficult to take immediate action if all you know is there's a channel that is too busy."

Accordingly, Version 407 of Omegamon for CICS includes an impact analysis capability that presents an easy-to-read graphics display of the effect of jobs, TSO users and other in-place CICS systems on CICS. In an age of distributed hardware, this approach will become more and more critical. Monitors need not be real-time tools, but to be true performance managers, the staff needs real-time capability in order to anticipate near-term events rather than simply pick up the pieces after the fact.

### Tracking and modeling.

Monitors may exist only for on-line use or may create data bases of measurement information for later analysis. The data capture products are, of course, intended to directly support each vendor's predictive tools and data base. BGS's Capture products, for example, can feed data directly to BGS's Best/1 modeling system and Info/Base management system.

Info/Base is a menu-driven information manager that takes data collected by the various Capture products and stores it in a data base using SAS Institute, Inc.'s data base management system software. One benefit of this is that performance reports and analyses can be customized through the use of SAS and SAS/Graph. However, Info/Base also builds in the additional overhead of requiring SAS to be used.

Monitors may also include what-if modeling. Based on the historical data coming in from a monitor, an analyst may want to see what would happen if processing increased by 20% or if the number of users doubled. What-if modeling shows the effect of changes in response to growth patterns.

For example, Boole & Babbage's CMF/Model 300 permits the creation of a baseline model with automatic verification provided through the monitor. The capability of a given product to report on system status and log significant events is critical if it is to support functions of this nature.

BGS's Best/1, introduced in 1977, had no competition at all for the first five years of its life and remains the dominant modeling system in the MVS and VM/CMS markets. With its ability to handle concurrent multi-programmed and network environments as well as the simpler batch shops, Best/1 is likely to provide solutions for most systems monitoring needs.

### Specialized monitors

There are also the specialized monitors. Network monitors, for example, although beyond the scope of

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## In Depth/Performance Management Tools

this article, are a substantial topic all by themselves.

One specialized monitor is TSO/MON from Morino Associates, Inc. in Vienna, Va. It is the only monitor devoted specifically to the TSO environment. TSO is often a major factor in the performance difficulties of MVS systems. By monitoring SYS-EVENT data and, through the ON-LINE option, giving the operators an interactive control capability, TSO/MON goes beyond monitoring to active management.

Another interesting product category is the specialized data base management system monitor, such as Look/Datacom from Princeton, N.J.-based Applied Data Research, Inc. (ADR). Look was one of the earliest monitor products, and ADR has continued to enhance it; versions of Look are currently available for several environments.

The announcement of Look/Datacom in July marked the first product to permit dynamic monitoring and management. Look/Datacom monitors a relational DBMS in real time, showing its performance relative to the operating system's current performance. This is a specialized activity, to be sure, but it reflects an increasing awareness by software vendors of the significance of performance as an issue.

### Performance goals for 4GLs

Expect other vendors to follow suit. For example, Information Builders, Inc. in New York has indicated that performance is now a key goal for Focus, the No. 1 fourth-genera-

tion language by installed base.

Frequently, the initial application of the monitoring/modeling technology is capacity planning. As the work load on a system increases and lease vs. purchase issues are debated, good management dictates a thorough analysis of needs before alternatives are considered.

BGS Vice-President of Mainframe Systems Donald Russell identifies five factors that bear on the accuracy of capacity planning products:

- Data quality.
- Data completeness.
- The quality of the modeling algorithms.
- The completeness of algorithms.
- The observation period.

Numerous vendors have integrated their product lines so that performance monitors feeding historical data bases may also feed capacity planning tools. Boole & Babbage has consistently maintained in articles and in product literature that queuing theory serves to elucidate the results gathered by the monitor and stored by the data base. This goes beyond the simple reporting and extrapolation performed by modeling of the capacity planning products into predictive modeling.

Working from data to a model is the next step. Boole & Babbage's CMF/Model 300 features what-if capabilities that allow modeling based on various growth rates, planning horizons, work load estimates and hardware acquisition strategies. Only by evaluating combinations of these various factors can the optimal solution be found for the shop with a

heavy work load.

BGS' Crystal, used in conjunction with its Capture data collection and analysis tools, sizes new or existing applications, calculating operational costs and facilitating identification of design alternatives. It can also help users evaluate software packages being considered for purchase to ensure that the packages will be used to their best advantage.

Modeling support libraries for CICS and IMS provide ready-made models for those environments, supplying a great deal of the general

information for the model and permitting users to focus on application-specific concerns. It is possible to use Crystal in conjunction with BGS's Best/1 to tune in advance by modeling different scenarios.

Jack Eliason, director of systems assurance and consulting for the Chicago Board Options Exchange (CBOE) in Chicago, is one satisfied BGS user. "Management told us to provide for a peak in business volume," he says. "In July and August, we projected a need to account for 2 million contracts a day and accordingly upgraded our IBM 3083 to a 3081K."

In fact, the CBOE did encounter a processing peak shortly thereafter and passed the test with flying colors. "On Sept. 11 and 12, we hit two million transactions on each day," Eliason says. "The planning process was greatly facilitated by the BGS products."

Still another interesting capability is provided by Performance Analysis/Capacity Evaluation subsystem (PACE) from Adesse Corp. in Ridgefield, Conn. PACE is designed specifically as a work load analysis tool, so usage levels for transaction-oriented processes may be modeled very effectively.

With the measurement capabilities in place, trend analysis can be performed. The identification and explanation of discontinuities becomes significant here and generally drive the need for a journal of externalities — such things as power failures, floods, big days on the stock market and so on.

Operating under VM/SP, PACE can actually simulate program behavior with a work-load generator. Complex patterns of resource consumption or guest operating system activity may be difficult to make time for as test runs on a busy system, so with careful parameter specification you can model them.

A number of standard scripts — sets of stored instructions that simulate a common applications scenario — are included; these may be tailored as needed. Monitoring facilities include a trace on terminal device activity to be sure that the required activities are taking place.

Trend analysis contributes to an understanding of present data; system statistics are really meaningful to an enterprise only in the context of these trends. Understanding changes allows DP to project growth, and it is this projection that supports capacity-planning projects.

System tuning needs vary greatly

depending on the installation. Following capacity planning, system tuning is usually the second phase of performance management into which a DP shop enters. Once the capacity issues are settled for the foreseeable future, the question of efficient utilization of resources is one to which management often turns its attention.

Across all types of operating systems, teleprocessing monitors and applications designs, one element is fairly constant — pure housekeeping. Seemingly obvious tasks like the

clearing of the programming environment and initialization of the appropriate resources are often ignored by applications programmers precisely because they are perceived to be systems-level tasks.

These problems are compounded by users of fourth-genera-

tion languages because these users often know very little about their working environment. After all, that is what fourth-generation languages are supposed to do — give users and programmers access to data without worrying about learning such details as job control language, EXECs or CICS.

The difficulty here is that while many aspects of a system's operation are adequately handled by defaults, large or unusual applications may be severely handicapped by an inadequate understanding of how to get the necessary resources to optimize the applications. The defaults may well be appropriate for the average case, but only if the expected resources are actually available.

### Balancing resources

Jack van Kinsbergen, Boole & Babbage senior vice-president, notes that throughput is not always the best measure of optimization. Service is critical in an on-line environment, particularly for real-time applications. "The real-time environment demands that the analyst balance . . . for peak usage periods, resulting in optimum service performance," Kinsbergen says. Balancing in this case may mean doling out available resources to the most important user at the time, saving lower priority applications for batch runs or for low-usage periods.

In most shops, where production batch jobs run in second and third shifts, system tuning should be based around the first shift. The goal of tuning here is providing access to the machine for programming staff — this staff represents a significant resource that is squandered if the system is unavailable during a significant amount of time.

One of the best known vendors in the system tuning field is Morino Associates, whose MVS Integrated Control System (MICS) was introduced in 1980. A highly modular product, MICS includes capacity planning, performance measurement, installation accounting and system reliability monitoring.

Criteria for performance may be set and then tracked against real performance with the MICS' Critical

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## In Depth/Performance Management Tools

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*A true AI-based performance management system should be able to use new information in much the same way that a systems programmer would. Otherwise, when you bought new hardware, you would have to spend weeks rewriting the rules.*

Index Management module. The SAS/Graph graphics package and the SAS/FSP full-screen dialogue handler, both from SAS Institute, can provide attractive visual representations of the tracked elements in conjunction with MICS.

RMF, SMF and TSO/MON data, as well as input from Boole & Babbage's IMF, are accepted, validated and stored in a data base of segmented SAS files. Morino supports its hundreds of in-

stallations with education, newsletters and telephone support.

## Applications tuning

Applications tuning is the third and final major phase in the evolution of performance management in many shops. At this stage, the department has achieved a systems configuration that is expected to be adequate for the near-term needs, and the system is performing optimally. All that remains is the

applications tuning, which ensures that all significant production applications use the available resources in the most efficient manner possible.

Applications tuning is often the least frequently applied tool, coming as it does after solutions for crises and provisions for the future have been made. As a concept, it gets a good deal of lip service from vendors, but there are not many vendors whose primary thrust is toward the applications programmer. Candle's Chernick admits, "Our primary market focus is the systems programmer and DP manager, although we do aim at applications programmers as well."

Boole & Babbage's TSA/PPE, one of the earliest products in the applications tuning field, was introduced in the early 1970s. Its measurement process includes yardsticks such as CPU usage, wait time, disk activity and paging rate, all measured by program module or transaction.

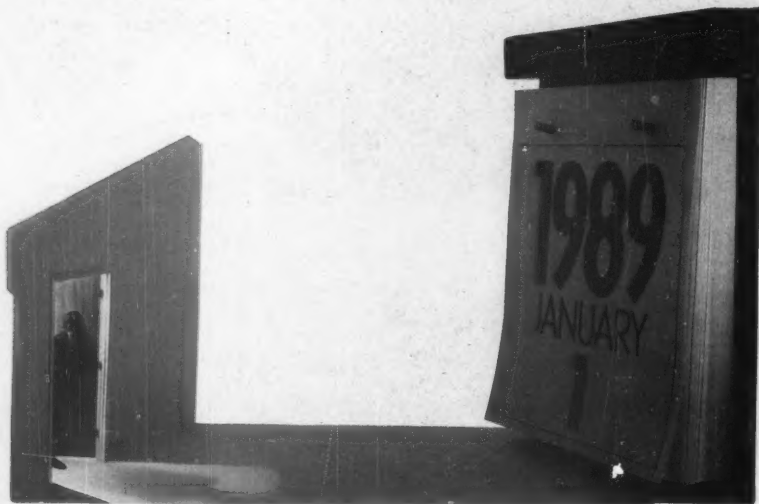
In approaching applications tuning, one obviously critical resource is memory. The number of applications running with inadequate memory is astonishing, and the problems associated with inadequate memory are serious: Programs stay running much longer than they really need to, frustrating users, and system queues get clogged up, requiring that much more overhead to manage them.

The fact that many programmers do not know how to set the appropriate numbers of I/O buffers on files or provide an adequate region in which their programs can run results in demands for the highest possible availability from system memory.

Programart's Strobe allows users to monitor the resources used by a program. The reports Strobe generates show the way a program uses memory, I/O devices and the like. It may pinpoint, for example, when an application continually accesses a table without ever loading it into memory from disk — the "thrashing" phenomenon — and other poor uses of memory allocation.

Phil Hathaway, software services supervisor with Foremost Insurance Co. in Grand Rapids, Mich. — a Strobe user — explains, "Strobe gives a global picture of what is happening for a particular job without restricting you only to the [applications] program itself; it also looks at the file I/O. This allows you both to reduce response time and expand the window for overnight processing. It's a super product."

Foremost looked at one of its data base packages and found the program was spending about 30% of its



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## In Depth/Performance Management Tools

processing cycles in one 64-byte section of code. The vendor responded favorably to notification of this fact and apparently expects to modify the software in the future.

Syntelligence, a Sunnyvale, Calif.-based artificial intelligence applications vendor, is another enthusiastic user of Strobe. Syntelligence tunes every piece of applications code in its products for maximized performance and has realized substantial improvements.

Expert systems in general are very resource hungry. Syntelligence develops a lot of its code in PL/I or a CICS environment. The development process includes two steps: Programmers design and debug in batch and then move the code to CICS.

Eric Kintzer, core software manager for Syntelligence, says, "Using Strobe was an illuminating experience. Syntelligence was able to use Strobe's measurements to determine that the PL/I code was not handling storage properly.

"We discovered we could make small coding changes that immediately produced a 10% to 15% improvement in efficiency. That was actually the easiest part."

Syntelligence was surprised by the CICS storage code improvements it was able to develop, Kintzer notes. "The typical CICS monitor often gives you a good picture of utilization of resources but not exactly where that utilization is taking place."

In areas such as AI, where applications are CPU intensive rather than I/O intensive, typical measurement techniques do not provide adequate data for tuning. The reprogramming to optimize CICS's use of memory for storage control was more complex, but Strobe aided greatly by providing the necessary measurements.

Syntelligence may be unique in that performance was a key goal that was pursued aggressively from the beginning. AI techniques will be more and more heavily used in the years to come; expert systems and the like are notoriously poor performers. When installed on a shared computing resource, they must be optimized to minimize their impact on other systems.

#### An eye toward efficiency

Often the application programmers are the last to climb on the performance bandwagon, and in many shops they never do. First, neither management nor most programming schools teach tuning. Second, in many shops applications programmers are completely separated from systems programmers and from the test phase in which their coding inefficiencies might be spotted and tightened up. The two people will never sit down face to face and point to a single loop that slows the system by 10%.

There may be specialists somewhere on the DP staff who scope applications, taking preliminary performance readings before they are allowed into production, but the specialists may not even change the applications unless the inefficiency is critical. If changes do get made, they may never be relayed to the applications programmer for future reference.

Careful applications design with an eye toward efficiency is critical. By involving the applications designers in the process of considering effi-

ciency, later problems can be minimized. In the real world this is not often done, which is unfortunate because a number of fine products exist for just this type of thoughtful, proactive performance management.

Another tuning approach is to overlap applications programs that use the same files. The applications can be queued to run at or near the same time if, for example, they read from the same tape reel or disk pack, so time is not lost physically moving reels back and forth to the library.

This approach requires a more global view than simple applications tuning. A product that maintains its own data base of applications needs and that can evaluate multiple entries in the job queue structure on a concurrent basis will shine here.

Several of the vendors mentioned offer this capability. This approach

is rarely undertaken by the programmers of the individual applications because they rarely have any idea what else may be executing at the same time as their program. It falls on the production staff, then, to take a broader view and seek correlations.

#### Intelligent intervention

Active performance management, as opposed to performance monitoring, implies actively managing tasks in progress, intervening as necessary to keep things running smoothly. Real-time monitoring products make it possible for staff to react intelligently to system problems when they occur; another approach is to let the software react for you.

Boole & Babbage's CICS Manager takes the first approach, permitting users to take steps to resolve prob-

lems before they become critical. Most CICS users, for example, are used to having tasks deleted by an operator, but this is only one of the possible interventions available. Providing adequate storage, monitoring the status of available devices, making devices available when they have been inactivated and other steps are all solutions that can head off a major system problem.

On-Line Software International, Inc. in Fort Lee, N.J., recently introduced Stabilize, which actually intervenes under CICS to prevent substantial downtime. By periodically sending a transaction describing the state of the system, Stabilize can itself trigger corrective action under certain well-defined circumstances.

Stabilize is undeniably a rule-based system, but Rick Holtmeyer, executive vice-president for new

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technologies at On-Line, shies away from calling it an expert system. "While it does what an expert would do based on a set of rules," he points out, "we're not using a real inference engine that continues to build its own knowledge base."

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To what degree can software solve the problems we have discussed? We have not even mentioned the impact of the micro-to-mainframe revolution: hundreds of users, ignorant of mainframe standards and practices, logging on to the on-line environment with new demands.

The most recent and impressive example of what sudden usage surges can do was the deregulation of the London Stock Exchange on "Big Bang" day in late October. It was a disaster, and downtime has

occurred since then because of inadequate capacity.

I believe we now have reasonable diagnostic tools for determining the state of the system, adequate rule-based expert systems technology, a wealth of experience and information available in systems programmers and other users of these products and certainly a crying need to put it all together. Why not utilize expert systems that can actually in-

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**Active performance management, as opposed to performance monitoring, implies actively managing tasks in progress, intervening as necessary to keep things running smoothly.**

tervene in processing by maintaining moment-to-moment profiles of system performance and user activity?

For example, why not suggest to users that since the tape will be read five times in this job, it should be written to disk first. Ideally, the system would notify the user of the situation and prompt for a response, such as, "Would you like the system to do this for you (Y/N)?"

Certainly the system should pro-

vide the ability to override (to answer "No"), because there may be good reasons for not optimizing a particular job or step in a given situation. True expert systems use inference engines that continue to learn as opposed to simple, rule-based systems that remain static. So a true AI-based performance management system should be able to use new information in much the same way that a systems programmer would. Otherwise, when you bought new hardware, you would have to spend weeks rewriting the rules.

Interestingly, vendors have voiced mixed responses on this issue. Some, like On-Line, are actively marketing what might be called rule-based, but not expert, systems. But Candle's Chernik says flatly, "If you compare these issues to, for example, medical diagnosis expert systems — a well-known AI application — you're comparing a centuries-old, highly developed diagnostic tradition involving years of data collection to a very new and largely inadequate set of tools. When our probes and analyzers are better, it may be time to talk about AI-based performance managers, but not yet."

**Making your best guess**

That kind of logic is difficult to refute, but consider this: If a doctor does not know what to do, he still must proceed and make a "best-guess" diagnosis and treat on that basis — the stakes are too high not to. Do our systems professionals act any differently when confronted with critical but unfamiliar problems? Can we not begin to develop expert systems to proceed on the same basis? Clearly, I believe, the answer is yes.

Boole & Babbage agrees. Its current marketing material stresses that real expert system technology is on the way, and its literature quotes IBM's statement that "AI is ready for business." AI has proved its worth in other industrial applications, the literature says, and represents a logical extension of the product line. The company's new enhancements will be marketed under the name "Performance Advisors."

BGS, on the other hand, insists that the problems are simply too complex. "The number of variables, such as configuration, languages used, the particular mix of applications on the system at the time and so on, simply make the task unmanageable," says Leonard Lipner, BGS president. "There are too many instabilities to effectively determine what the aggregate demand on the resources might be. Tuning is best done on an individual application."

What other vendor examples do we have to point to the future? Certainly Digital Equipment Corp. has led the way in AI for years. Are the cobbler's children barefoot in DEC's shop as well? The answer is no. One of the earliest expert systems, in fact, is DEC's XCON, also known as R1. An expert system for the configuration of VAX systems, XCON has been in use in DEC's plants since 1980, assisting in designing hardware configurations, shipping parts and providing diagnostics.

It seems to me that the question is not, "Can computers actively participate in performance management of themselves and other computers?" Rather, we should be asking, "When is someone going to start selling the products that do it?"

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# MANAGEMENT



## TAKING CHARGE

Frank J. Stanley

### The art of motivation

**M**otivation is an often discussed but much misunderstood management skill that should be an integral part of the activities of any manager who plans on being effective in today's business world.

There is no end to the information available on this topic, yet there seems to be very poor understanding among managers of what motivation is, why it is necessary or how it can be achieved. While the ability to motivate is a complex skill with a great many variables, the fundamentals are relatively simple and can provide a return far in excess of the effort required to put them into place.

What is motivation? As it relates to management, motivation can be defined as getting individuals to strive to achieve management objectives because they want to achieve them. The primary payback can be thought of as increased quantity and/or quality of production, although there can be other paybacks, such as lower turnover and higher morale.

The factors that motivate workers will vary from individual to individual and even for one individual as time and circumstances change. Because of this, managers must not only learn how to introduce motivating factors, they must also develop enough rapport with workers to know and apply the specific motivators meaningful to a particular employee.

See ART page 61

Stanley is a systems engineering manager for Computer Task Group, Inc., a Buffalo, N.Y.-based consulting firm.

## Airline systems do battle

### United forms subsidiary; American targets Japan

By David A. Ludlum

The parent company of United Airlines plans to spin off a subsidiary built around its Apollo computer reservation system that will pursue new data processing business ventures, according to company officials.

The move, effective Jan. 1, follows similar ones this year by the parent companies of American Airlines and Eastern Air Lines and comes as Trans World Airlines and Northwest Airlines get ready to launch jointly owned data processing partnerships.

It also comes as American's sibling organization has entered electronic banking, telemarketing and hotel and rental car reservations, and is negotiating a pact with All Nippon Airways to give it access to 1,700 Japanese travel agencies, and as United's sibling begins beta testing a new generation of its travel agency management system.

TWA and Northwest are already operating their partnerships and are expected to finalize the agreements establishing them today, according to Xen Sanders, president of one partnership, PARS Services. It operates reservation systems for the two airlines and for the other partnership, PARS Marketing, which sells automation services to travel agencies and their corporate customers.

In August Northwest announced it had agreed to buy a half interest in TWA's

PARS reservation system for \$140 million.

The still unnamed subsidiary of United's parent company, UAL Corp., will be headed by Barry Kotar, now United's vice-president of Apollo Services. He joined United in 1967 and served in several financial posts, then as controller of Computer and Communications Services, director of Apollo Services and vice-president of Customer Services.

Creating the subsidiary will give the Apollo organization greater financial independence and more freedom to pursue business ventures outside the travel industry, according to UAL executives.

Kotar says Apollo lends itself to other businesses as varied as trucking and insurance, although specific opportunities have not been identified. "We have a huge network all over the world that is underutilized."

We're going to take a look at where the opportunities are and move into them," he says.

Kotar adds that the subsidiary's chief function will be marketing and that it will

foster an entrepreneurial environment, in contrast to the more structured atmosphere at United. It will be based in rented space in a new building in Rosemont, Ill., near UAL's Elk Grove Village, Ill., headquarters.

Henry Feinberg, Apollo Services' director of marketing, says the move to subsidiary status will avoid constraints from competing demands for resources within United. "We didn't want our ability to grow to be re-

strained by the cyclical nature of airlines," Feinberg says.

See AIRLINE page 60



United's Kotar

### Apollo vs. Sabre

How the two leading U.S. airline reservation systems stack up

	United's Apollo	American's Sabre
Airlines Listed	650	600
Inquiries/Per Sec.	1,300	1,450
U.S. Clients	8,000	12,000
U.S. Terminals & Printers	58,000	94,400
U.S. Market Share	26%	35%
Annual Revenue	\$325M	\$335M (1985)

Information provided by American Airlines and United Airlines

## INSIDE

Calendar: Selected conferences, seminars, exhibitions/62

## INSTANT ANALYSIS

"The risk we run is treating [artificial intelligence] as a technology rather than as an opportunity to foment change in the business plan."

— Robert J. Benson, director of the Center for the Study of Data Processing at Washington University in St. Louis

# The Common Sense Data Network



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## MANAGEMENT

## Airline systems battle it out

From page 59

"You're not always going to get the answer you want if you're in the computer side and someone wants to buy airplanes," he adds. UAL will invest more than \$1.2 billion in Apollo Services during the next four years or so to "grow the business," Feinberg says.

In August, American's parent company, AMR Corp., launched AMR Information Services, Inc., a subsidiary offering data processing products and services, particularly for other airlines and operators of cable television systems.

The subsidiary recently established three business units: Direct Marketing Corp., which provides telemarketing services; AMR Travel Services, which markets reservation services to hotels and car rental companies; and Video Financial Services, which offers systems for electronic banking. AMR acquired the banking unit earlier this month from seven banks.

### Keeping system in-house

Unlike United, TWA and Eastern, American has kept its internal airline reservation system within its airline, setting up separate systems for its new business ventures.

Robert Joedicke, airline analyst for Shearson Lehman Brothers, Inc., says AMR has a lead in offering data

processing services to external customers and that United is playing catch up.

Echoing Kotar, Joedicke says United's chief aim is to make fuller use of Apollo. "The key is to figure out how you can use unused time and capacity. What do you do with it at night?" he asks.

According to *Travel Weekly*, Apollo holds about a 26% share of the travel agency reservation market in the U.S., with roughly 8,000 customers. Apollo is second to the 35% share garnered by American's Sabre system. Sabre's percentage represents approximately 12,000 customers.

The other major American systems are Eastern's System One, with about 17% of the market, TWA's PARS, with about 13%, and Delta Air Lines' Datas II, with about 9%. Delta has not set up a data processing subsidiary.

### Aggressive marketing

Sabre and Apollo are both aggressively marketing their reservation and management services to European and Asian travel agencies. Both systems are also exploring joint ventures with foreign airlines. These efforts have gathered steam in the last year.

Last month, presidents of 20 European airlines agreed to pool \$500,000 to study forming a joint system. The airline presidents agreed not to enter ventures with American systems at this time.

American is negotiating with All Nippon Airways to electronically link Sabre with All Nippon's Resana

reservation system, which serves 1,700 travel agencies in Japan, according to AMR spokesman Joe Stroop.

### Linking systems

If the deal works out, travel agencies could move from Resana to Sabre with a keyboard command, he adds. The pact is expected to be finalized sometime in the spring, according to Stroop.

Apollo has about 150 travel agency clients in Europe and 60 to 75 in Asia, while Sabre has about 200 in Europe, spokesmen say. The market shares are tiny compared to the local airlines' systems, but overseas travel agencies are increasingly attracted to the more sophisticated American systems.

The chief requirement for signing overseas clients is incorporating local schedules and services into the data base, Kotar says.

Other obstacles include restrictions on international data movement and regulation by national telephone authorities.

### Clearing regulatory hurdles

"To the extent they want to be less responsive than they could be, then you can't get your lines installed," Kotar says. The toughest regulatory hurdles have come in West Germany, followed by Japan, Taiwan and Korea, he adds.

Another major competitive arena for the airline companies is selling travel agencies office management systems built around the reservation data bases.

Functions include word processing, file management, accounting, financial analysis and communications for ordering things like supplies and insurance.

Apollo is preparing to roll out its Enterprise Agency Management System, a new generation that follows the Apollo Business System. While the current system uses dumb terminals, the new one, which is being developed by IBM's Federal Systems Division in Houston, distributes processing.

Agencies will use IBM Personal Computer ATs, the forthcoming IBM 9370 minicomputer or System 370 or 4381 mainframes, with intelligent terminals linkable through IBM's Token-Ring network.

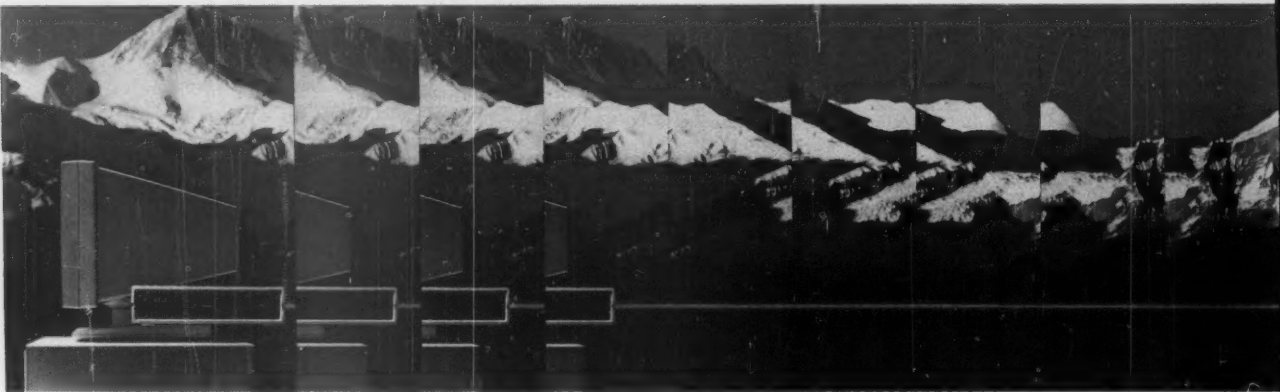
### Beta tests beginning

The first beta tests of the system, incorporating IBM's first commercially available 9370s, begin this month [CW, Dec. 8].

Regular shipments of Enterprise systems are slated for June or July 1987.

American's Agency Data Systems unit offers management systems based on Data General Corp. minicomputers.

This year, American opened up Sabre to let agencies add equipment of their own to Sabre-based management systems and offered to link an agency's terminals with its in-house computer, allowing messaging and exchange of files. "The idea is that we're trying to make Sabre a travel supermarket," Stroop says. "We're trying to explode into that area."



## PC TELECOMMUNICATIONS FROM A COMP

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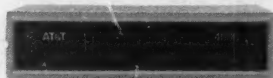
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The AT&T Model 4112 does everything the 4000 does.



The AT&T Model 4000



The AT&T Model 4024



## MANAGEMENT

## The art of motivation

From page 59

What are these motivators? Research has shown that there are a number of motivating factors, or needs, that are common among data processing professionals. In order of importance, they consist of the following:

- Achievement.
- Recognition.
- Challenge.
- Responsibility.
- Advancement.
- Growth.

Motivation of all workers is also affected by other factors less subject to a supervisor's control, such as salary, security, status, company policies, working conditions and personal needs. This discussion will be limited to the six factors common to data processing that are subject to a supervisor's control.

**Achievement.** A sense of achievement comes from activities that have meaning to a staff member and provide a sense of accomplishment. The worker can realize this through a joint effort even if his own activities are routine. The necessary ingredient is feeling useful. In many cases, managers fail to provide for this; they simply assign work and fail to emphasize the significance or importance of it to the employee or organization. Busy work never provides a sense of achievement.

**Recognition.** The need for recognition is probably the easiest motivational need to satisfy, yet the one most often overlooked. Unlike other needs, recognition is totally under the control of the manager and only costs the time and effort of a few well-chosen words. Unfortunately, most employees work under the "contra-recognition" method of management: If they haven't heard that they did something wrong, they have to assume they're doing all right.

Recognition doesn't have to be elaborate to be effective; a few words or a modest token award for a specific accomplishment — and specific is important — can have a dramatic effect on future performance.

**Challenge.** People are motivated by work they find inherently interesting or new. One of the main reasons entry-level employees can be so eager, ambitious and productive is that they are motivated by their work; virtually everything they get involved in is new and interesting, even maintenance programming. Since managers don't always control what work is done, they can use challenge as a motivator by controlling who performs a specific activity.

A comment on recruiting: Don't make the mistake of trying to fit the proverbial square peg into the round hole. Hire the type of individual who will be satisfied doing the type of work the department does most frequently. Maintenance programmers should not be hired in shops doing new development, just as systems programmers shouldn't be hired for

applications work. Common sense should prevail.

**Responsibility.** Employees prefer to have some control over their activities and to make decisions on their own; this provides a sense of responsibility. The tighter the reins a manager keeps on his staff — the more he watches over workers and directs every activity — the more frustrated and resentful employees become. People are generally more capable than they are given credit for.

A manager should turn workers loose, giving them just enough direction so they can learn to be resourceful and solve problems. To be sure, checkpoints and reviews are needed, and problem employees need closer supervision, but managers need to be careful that they don't overmanage.

**Opportunity for advancement.** This need is best described as upward mobility within the organization. Any shop or department has some opportunity built into it. Managers can play an important role in providing as many promotions as possible for staff members. They are also instrumental in providing the training and experience staff members need to move up.

Even though new blood and new skills are needed from time to time, a manager should never avoid training and promoting a competent employee without serious justification.

**Growth.** Individuals grow when they reach objectives associated with their personal goals. This could occur through a promotion, personal accomplishment, training sessions, a

successful presentation or increased responsibility. Companies that provide for internal or external training beyond essential technical skills will usually find a higher sense of growth among their employees.

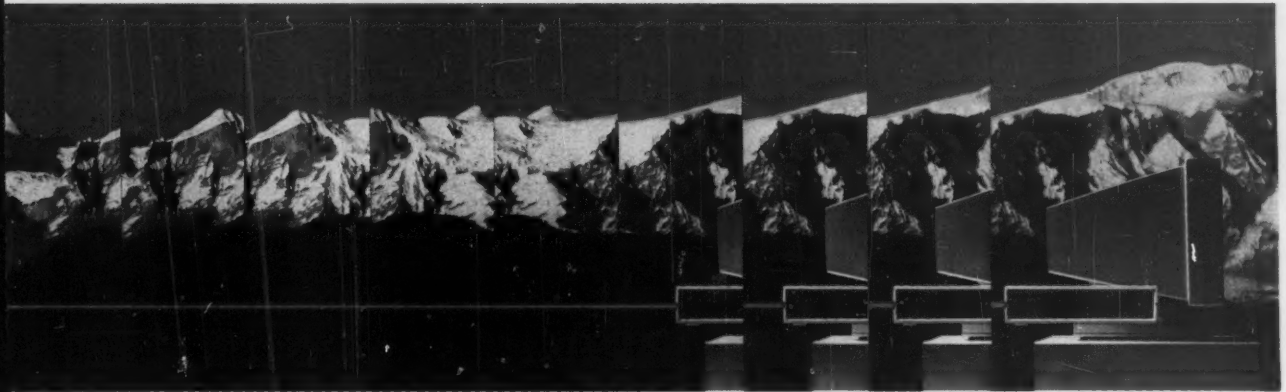
The pursuit of general education or training in interpersonal skills, communication, stress management and business management are examples of opportunities for personal growth. As with the opportunity for advancement, managers must be in tune with their employees on more than a superficial level to be able to discern and react to these needs.

### Understanding workers' needs

As a manager, do you try to provide for these needs for your staff? Among top employees, do you know which needs are most important?

Chances are that due to the nature of management you keep pretty busy with day-to-day demands and unrelenting paperwork. These motivational needs are important, though. Satisfying them will make your job easier and everyone else's job more challenging. Motivation can turn a mere job into an exciting career and transform the humdrum workplace into a positive, enthusiastic environment.

If you haven't had the opportunity to address these needs, start now and give it a real try. Chances are you'll be more than delighted with the results. You have nothing to lose but some time, and you have the potential to add real meaning and accomplishment to people's lives. Not a bad deal in anyone's book.



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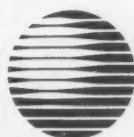
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## MANAGEMENT



## CALENDAR

## JANUARY 4-10

**Developing Effective Computer Documentation.** Sunnyvale, Calif., Jan. 5-7 — Contact: Information Mapping, Inc., 275 Wyman St., Waltham, Mass. 02154.

**Hawaii International Conference on System Sciences.** Kailua-Kona, Hawaii, Jan. 6-9 — Contact: Center for Executive Development, College of Business Administration, University of Hawaii, B-101, 2404 Maile Way, Honolulu, Hawaii 96822.

**Fiber Optic Seminar.** Chicago, Jan. 7-9 — Contact: The American Institute, 55 Main St., Madison, N.J. 07940. Also being held Feb. 4-6 in Washington, D.C.

**Ten Unix Seminars.** Fre-

mont, Calif., Jan. 7-10 — Contact: Uni-Ops, P.O. Box 27097, Concord, Calif. 94527.

## JANUARY 11-17

**Business Automation Forum.** Fort Lauderdale, Fla., Jan. 11-14 — Contact: Recognition Technologies Users Association, P.O. Box 2016, Manchester Center, Vt. 05255.

**Application Prototyping: Implementing the New Sys-**

**tems Development Technology.** Boston, Jan. 12-13 — Contact: Software Institute of America, Inc., 8 Windsor St., Andover, Mass. 01810. Also being held Feb. 19-20 in Philadelphia and Feb. 26-27 in Los Angeles.

**Interfacing Sensors with the IBM PC.** Madison, Wis., Jan. 12-14 — Contact: Department of Engineering Professional Development, University of Wisconsin at Madison, 432 N. Lake St., Madison, Wis. 53706.

**Writing Better Software Documentation for Users.** Santa Cruz, Calif., Jan. 12-14 — Contact: University of California Extension, Santa Cruz, Calif. 95064.

**Moscon I.** San Jose, Calif., Jan. 13-14 — Contact: Technology Forums, Suite F, 3425 Pomona Blvd., Pomona, Calif. 91768.

**Efficient Fortran Techniques for Parallel Vector Processors.** San Diego, Jan. 12-16 — Contact: Pacific-Sierra Research Corp., Suite 203, 312 Main St., Placerville, Calif. 95667.

**Winter MAP/TOP Users Group Meeting.** Phoenix, Jan. 13-14 — Contact: Society of Manufacturing Engineers, Technical Activities Division, P.O. Box 930, One SME Drive, Dearborn, Mich. 48121.

**Managing and Motivating Computer Professionals.** Stamford, Conn., Jan. 13-15 — Contact: Gary Slaughter Corp., 400 Fifth Ave. S., Naples, Fla. 33940. Also being held Feb. 10-12 in Washington, D.C./Baltimore.

**Writing Procedures, Policies and Documentation.** Orlando, Fla., Jan. 13-16 — Contact: Laurel Lewis, Information Mapping, Inc., 275 Wyman St., Waltham, Mass. 02154. Also being held Jan. 13-16 in Somerset, N.J., and Feb. 10-13 in Albuquerque, N.M.

**Computer Disaster Recovery Planning Seminar.** Los Angeles, Jan. 14-16 — Contact: Devlin Associates, Inc., 430 Exton Commons, Exton, Pa. 19341. Also being held March 18-20 in Philadelphia.

**Computer Graphics '87.** San Diego, Jan. 14-16 — Contact: Industry Representative, Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

**Data Administration and Data Resource Development.** Dallas, Jan. 14-16 — Contact: Software Institute of America, Inc., 8 Windsor St., Andover, Mass. 01810.

**The Society for Computer Simulation 1987 Multi-conference.** San Diego, Jan. 14-16 — Contact: SCS, P.O. Box 17900, San Diego, Calif. 92117.

**Data Communications and Networking for the IBM PC XT/AT and Compatibles.** New Brunswick, N.J., Jan. 15-16 — Contact: Software Institute of America, Inc., 8 Windsor St., Andover, Mass. 01810.

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# NEW PRODUCTS

## E-mail package out for micro conversations

Telenet Communications Corp., based in Reston, Va., has announced PC Telemail, an electronic messaging software package for personal computers.

According to a company spokesman, PC Telemail incorporates features users need to manage electronic documents from their desktops, including word processing, filing, forms creation, file transfer and communications capabilities.

PC Telemail uses pop-up menus and function keys. The company says that users are able to compose messages interactively or off-line using a built-in word processor.

### Batch mailing

Users can also compose batches of messages and place them in an electronic "out box" to be sent at a later, predetermined time, the vendor said.

The spokesman added that documents created on PC Telemail can be sent via a variety of means, including the Telemail electronic messaging service; Telemail Tel-ex; and Telemail Xpress, which are hard-copy laser printed letters delivered by the U.S. Postal Service.

The package also allows users to send spreadsheets, documents, software files and graphics files.

### File transfer

File transfer is accomplished with local error detection and correction through local Micropro Networking Protocol (MNP), which works in conjunction with the MNP feature of the Telenet Public Data Network.

Other features include an electronic forms capability said to allow users to create their own business forms and electronic filing that provides PC-resident electronic file boxes for In, Out and Sent, allowing users to manage messages more easily.

PC Telemail reportedly runs on IBM Personal Computers and compatibles.

It is priced at \$150 for a single diskette, including documentation.

## Drive provides VS backup

### Wang develops high-power streaming cartridge solution

Wang Laboratories, Inc. of Lowell, Mass., has announced a streaming cartridge tape drive for low- and mid-range Wang VS computers.

The Model 2238V-1 streaming cartridge tape drive is said to provide users of VS 5, VS 6, VS 15 and VS 65 systems with a high-capacity solution for backing up, restoring and interchanging data.

The device uses industry-standard ¼-in. cartridges. Up to 45M bytes of data can be stored on a 450-ft data cartridge and up to 60M bytes on a 600-ft cartridge.

### File backup

According to spokesmen from Wang, users can back up either individual files, groups of files or the entire contents of a

disk onto tape.

Large-capacity disks can be backed up on multiple data cartridges, the company added.

The Model 2238V-1 streaming cartridge tape drive has a price tag of \$2,500, according to the company.

### VS letter-quality printer

The company also announced a letter-quality printer for users of Wang VS computers and Office Information Systems.

According to the spokesman, the DW/OS-60 daisywheel printer, which has a price tag of \$2,400, runs at a maximum of 60 char./sec. and at 44 char./sec. when printing Shannon text.

The printer features a 15-in.-wide platen and accommodates up to six-part carbonless forms.

Both the printer and the streaming cartridge tape drive are available immediately, the vendor said.

## With Help, visuals and pointers, Oracle claims to ease SQL DBMS access for users

Oracle Corp., based in Belmont, Calif., has announced EasySQL, an end-user interface for the company's Oracle relational data base management system.

According to the vendor, EasySQL was designed for end users who are unfamiliar with IBM's SQL but need the benefits of a relational DBMS.

The software provides a visual interface for Oracle users, the vendor said, featuring point-and-select techniques aided by pop-up windows, function keys, flexible menus, automatic hints and context-sensitive Help. Mouse support is available on the IBM Personal Computer.

### Fill in the blanks

In addition to ad hoc relational query capabilities, EasySQL is said to provide facilities for report writing, color graphics, data base table creation and maintenance. Other capabilities include data entry and updates using fill-in-the-blank techniques, the vendor said.

EasySQL incorporates the company's Easylink intelligent micro-to-mainframe link. EasySQL's menus let users access other Oracle programs, including SQLCalc, the Lotus Development Corp.-compatible spreadsheet.

According to the vendor, the output of user queries is normally directed to the user screen, but the user may redirect the output to standard PC data file formats, including DIF, PRN, SYLK and WKS.

### Fees and prices

The product is available on IBM PCs and Digital Equipment Corp. VAX minicomputers.

As an add-on for current IBM PC-DOS-based Oracle users, EasySQL costs \$395. With the Oracle relational DBMS, it is \$995.

Initial license fees for the VAX range from \$1,000 on the DEC Microvax I and \$2,000 on the Microvax II to \$18,000 on the VAX 8800.

## INSIDE

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Systems  
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**IBM**  
`printf("Hello, world\n");`

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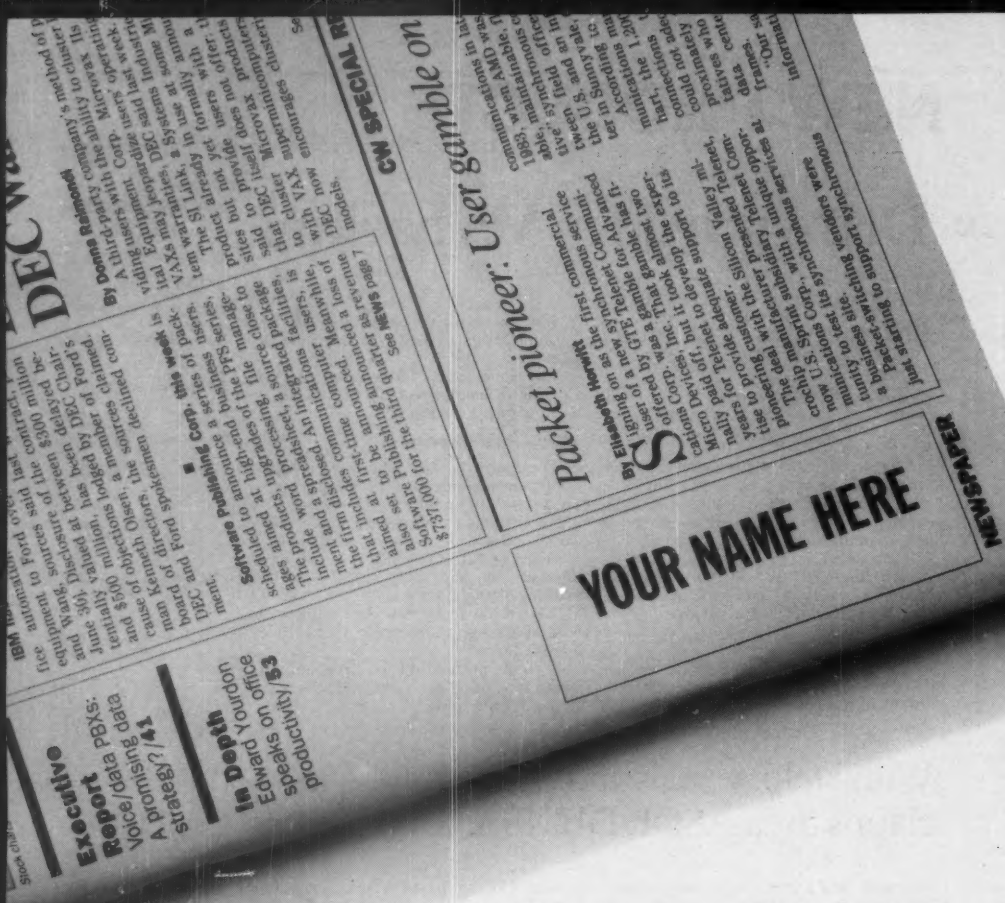
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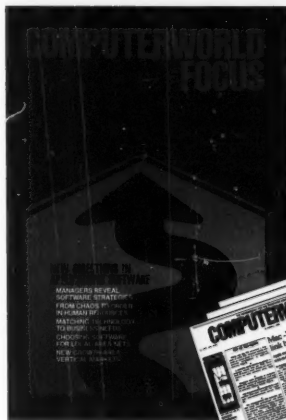


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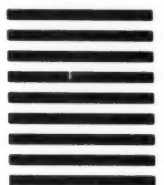
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## NEW PRODUCTS/SOFTWARE &amp; SERVICES

SOFTWARE  
& SERVICES

## Training software

**HPR International** has increased the number of instructor-led classes and education centers for its IBM System/36 and 38 curriculum.

The courses are said to teach basic through advanced topics for operators, programmers, system analysts and data processing managers. The hands-on classes are oriented toward using the systems' functions to design, develop, implement and tune interactive or batch applications.

Classes last from two to five days. Prices range from \$340 to \$850.

HPR International, Suite 102, Bldg. 2-A, 111 Village Pkwy. N.E., Marietta, Ga. 30067.

## MICROCOMPUTERS

## Software utilities

**Principal Systems, Inc.** has announced the **Principal** line of software and hardware products for use in converting word processing documents from one format to another.

The line includes **PC Switch** for converting among personal computer word processing packages; **PC Switch Card**, a printed circuit card with software that supports conversion of 5¼-in. disks from dedicated word processing systems; and **PC Switch Drive**, a half-height disk drive able to accommodate 8-in. disks from older word processing systems.

Software packages supported by Principal include Wang Laboratories, Inc. OIS; IBM Displaywriter and Microsoft Word.

PC Switch costs \$495; PC Switch Card costs \$2,795 and PC Switch Drive costs \$1,195.

Principal Systems, Suite 100, 6611 Bay Circle, Norcross, Ga. 30071.

## Board-level devices

**Magnavox, Co.** has introduced the **8AV480** multigraph display card.

The adapter is said to be a superset of the IBM Enhanced Graphics Adapter display system. When used in conjunction with the Magnavox multimode color display, it can display color images in 752 by 410 pixel, 640 by 480 pixel or 640 by 350 pixel resolution modes. Each mode can display 16 colors from a palette of 64.

The short-slot display card can display normal color graphics images, monochrome text and graphics and Hercules graphics images.

The 8AV480 costs \$600.

Magnavox, P.O. Box 14810, Interstate 40 and Straw Plains Pike, Knoxville, Tenn. 37914.

## Communications

**Woolf Software Systems, Inc.** has announced **Move-It Version 4**.

Version 4 of the communications program features automatic file compression, X-Modem protocol, scripting files and keyboard macros. The scripting system allows automation of the communication session, including the time at which the session is to begin, logging on, trapping the session to a file and logging off.

Move-It Version 4 runs on the IBM Personal Computer, PC XT, AT and compatibles. It costs \$150.

Woolf Software Systems, Suite

106, 22048 Sherman Way, Canoga Park, Calif. 91303.

## COMMUNICATIONS

## Multiplexers/Modems

**Anderson Jacobson, Inc.** has announced the **AJ 9601-FD** fast poll modem.

The modem was designed for multipoint or point-to-point applications.

According to the vendor, the modem provides full duplex, synchronous operation at 9.6K bit/sec. over four-wire, unconditioned leased lines with fallback speeds of 7.2K and 4.8K bit/sec.

The single unit list price of the AJ 9601-FD is \$2,295.

Anderson Jacobson, 521 Charcot Ave., San Jose, Calif. 95131.

SYSTEMS  
& PERIPHERALS

## Data storage

**Cipher Data Products, Inc.** has introduced the **Spectra 114-Plus** disk controller.

The SMD controller was designed for Perkin-Elmer Corp. 32-bit computers. It provides up to 3M bit/sec. transfer rates and interfaces for any combination of four storage module drive-type disk drives using IDC, S114 or high-performance formatting.

Features include a spiral formatting option; a shared-sector sparing option; and 7A-power consumption.

The Spectra 114-Plus costs \$3,180.

Cipher, P.O. Box 85170, 10101 Old Grove Road, San Diego, Calif. 92138.

## PRICE REDUCTIONS

**Sigma Information Systems** has reduced the price of its **SDC-RQD11-B** Q-bus ST506 Winchester controller.

The controller communicates with the computer via Digital Equipment Corp.'s Mass Storage Control Protocol (MSCP). Two ST506-compatible 5¼-in. Winchester disk drives of any capacity may be connected to each SDC-RQD11-B. According to the vendor, up to three controllers may coexist in one system.

Features include off-line menu-driven formatting and diagnostics, selectable base addresses, up to 32 MSCP command queues and dynamic bad-block replacement.

The SDC-RQD11-B is now priced at \$825.

Sigma, 3401 E. LaPalma Ave., Anaheim, Calif. 92806.

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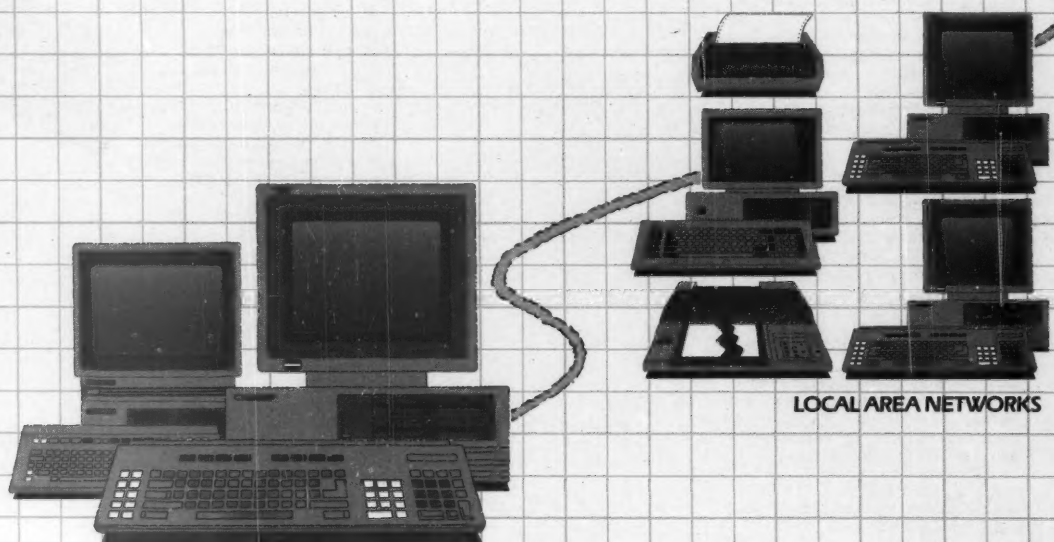
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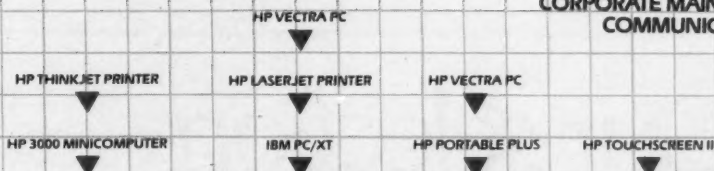
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# COMPUTER INDUSTRY

Section begins on page 94

## Comdisco's Pontikes hails investment tax credit repeal

### Expects leasing to rise as incentives shift

By Clinton Wilder

Comdisco, Inc., the industry leader of the always volatile and often controversial computer leasing business, has continued its rapid growth. In a business beset by intense competition and uncertainty over tax reform, Comdisco surpassed the \$900 million revenue mark for its fiscal year ended Sept. 30 with a 50% sales increase, while profits grew by 37%.

Comdisco Chairman and President Kenneth N. Pontikes recently spoke with *Computerworld* about investment tax credit repeal, the changing mix of Comdisco's lease base and the hotly debated use of income funds in the leasing industry.

**CW:** Looking at the computer leasing business after the repeal of the investment tax credit, what kinds of changes do you see coming in terms of restructuring of the industry?

**PONTIKES:** Looking at it, the repeal of investment tax credit will be a big benefit to most of the members of the Computer Dealers and Lessors Association [CDLA]. You haven't really changed the purchase/lease analysis that a customer goes through, because you have taken the

investment tax credit from both sides of the equation. I know a number of users who have purchased equipment over the years strictly because of investment tax credit, and already we are seeing some indication that those people are going to start leasing.

**CW:** How much has the tax credit repeal pushed lease rates up already?

**PONTIKES:** Generally speaking, the rates are up 10%.

**CW:** Is that generally what Comdisco's rates have done?

**PONTIKES:** Most of the CDLA people have been quoting two rates: an investment tax credit rate and a nontax credit rate. Where you don't have an investment tax credit, it's the other rate. So it's not like we've raised our rates, it's just that we're not doing investment tax credit rates anymore. So, there really hasn't been a raise in the rates.

**CW:** In terms of selling the tax benefits of leasing on the investors' side, with that seemingly gone, what is the effect on the leasing industry?

**PONTIKES:** What you've got now will be an industry run much more on

economics as opposed to tax incentives. In that environment, I think the good traders, the good dealers, the full-service leasing companies will thrive more than in an environment we were in, where there was a lot of strictly tax-oriented leasing occurring.



Kenneth Pontikes

The economics and the real payoff in this business comes when you can remarket and when you can realize residuals. There's a period of time for that to be realized, and you have to build a critical mass to make it work. So it will be easier to do that.

The other thing which will probably help is the alternative minimum tax. A lot of companies that would have purchased equipment probably won't because the depreciation difference is a preference item. If someone is a marginal taxpayer, in the past when they would have bought the equipment to shelter it down, now they will probably opt for a lease so they can expense it. That's another potential market growth area.

**CW:** What about the income fund controversy? What are your thoughts on leasing companies turning to that investment source in the

post-investment tax credit world?

**PONTIKES:** There are a large number of people using income fund kinds of vehicles, but Comdisco has never done one, and right now it looks like we will never do one. I don't agree with them. What happens is you are getting equity from individuals under an assumption that is like the beauty of compound interest. If you compound a higher number, you end up with more.

I'm sure there have been some good income funds done, but generally what I see out there are transactions where they are just chasing. The transactions would depend on an unrealistically high residual value. So it is really a residual value play to give that yield.

Having been in the business for a while and having gone through the cycles, I am just not comfortable with those assumptions. I feel that in the long run they will cease to be a good vehicle. They are being sold as if this is God's gift to IRAs, and from my observations, in many cases the investors may get their principal back, but realization of the yields in the prospectuses will not happen.

**CW:** But don't they have to use accepted residual forecasts from market research firms like International Data Corp.?

See **PONTIKES** page 72

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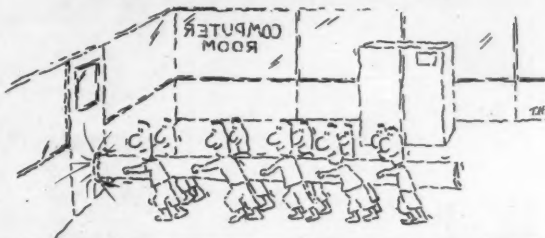
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Leader: Harold C. Folts,  
Executive Director, OMNICO Inc.

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### T-2 ISDN—Status and Developments

Leaders: James G. Herman, Director, and Mary A. Johnston, Senior Consultant, Telecommunications Consulting Group, BBN Communications



In this tutorial you'll learn what ISDN will and won't deliver in the late 1980s, what the emerging ISDN standards will mean in terms of new services and improved network performance, what holes still exist in the standards and trials, how to make smart buying decisions while keeping open your options for ISDN compatibility, and more. *Level: Intermediate.*



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Leader: Dr. John M. McQuillan,  
President, McQuillan Consulting

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### T-5 Building the Network Management and Technical Control Facility

Leader: Gabriel Kasperek,  
President, Kazcom Inc.

This one-day course will help you understand the strategic value of network control, explore alternative technologies for managing your network, and discover how to evaluate current technologies for use in your own organization. You'll become familiar with the test equipment you need for successful network control, and understand industry trends and future directions. *Level: Introductory—Intermediate.*



### T-6 Designing Voice and Data Networks Under the New Tariffs

Leader: Robert L. Ellis,  
President, The ARIES Group Inc.

Take this tutorial to learn the structure of the post-divestiture tariffs, the latest January 1987 changes to these tariffs, how to price interstate private lines, how to configure and price interstate FX services, the new economics involved in configuring data networks, the LATA-pure strategy, and more. *Level: Intermediate.*



### T-7 Managing the Telecommunications Resource

Leader: Gerald P. Ryan,  
President and Founder, Connections Telecommunications Inc.

This one-day course briefs you on how to develop a successful management environment. You'll learn what tools are available to do your job more professionally, how to plan a network management center, how to staff and train the department, and how to prepare and submit departmental budgets. *Level: Intermediate.*



### T-8 IBM Token-Ring Versus Other LAN Choices

Leader: Dr. Kenneth J. Thurber,  
President, Architecture Technology Inc.

This tutorial gives you an across-the-board overview of announced products, future plans, compatible products, and IBM's overall strategy with respect to Token-Ring technology. You'll discuss the Token-Ring's relationship to IEEE 802.5, the IBM cabling systems and hosts, get an in-depth look at NETBIOS and APPC/LU 6.2 interfaces, and more. *Level: Intermediate.*



### T-9 VSAT Technology and Implementation

Leader: Dr. Jerome G. Lucas,  
President, TeleStrategies

Learn the basics of applying very small aperture terminal (VSAT) satellite communications to your networking needs. You'll get acquainted with basic application requirements in SNA networking, data broadcasting, PC networking, video broadcasting, and teleconferencing. *Level: Intermediate.*



### T-10 IBM's Systems Network Architecture (SNA): A Detailed Road Map

Leader: Daniel Zatyko,  
President, Zatyko Associates

Enroll in this intensive one-day tutorial to understand the evolution of SNA, and learn fundamental SNA concepts—the seven SNA architectural layers, SNA's physical and logical addressing, strategic SNA products, components of NetView, Token-Ring networks, functionality and capabilities of the LU 6.2/APPC and NETBIOS interfaces, and more. *Level: Intermediate.*



### T-11 An Introduction to Data Communications Today

Leader: Gary Audin,  
President, Delphi Inc.

This course introduces you to the basic concepts, terminology and technology of data communications. You'll learn how various networks operate and how to select them; how best to interconnect computers, terminals, and PCs using different protocols; and what software is necessary to support protocols and network management. *Level: Introductory.*



### T-12 Understanding the Communications Regulatory Environment

Leader: Richard E. Wiley,  
Senior Partner, Wiley, Rein & Fielding

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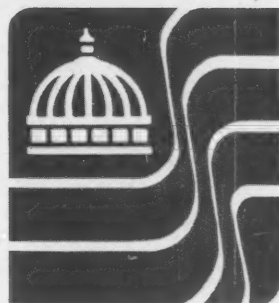
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## COMPUTER INDUSTRY

## Pontikes hails tax credit repeal

From page 69

**PONTIKES:** That just means that if I have an income fund, I go out and get the most aggressive forecast from someone. A residual forecast is just that — a residual forecast. If it doesn't hold up, I come back and say, "So I was wrong." But maybe someone will get lucky and make everything; you can never tell.

I generally disagree with income funds, yet I've seen, in the early days, people who have done some income funds and shouldn't have because they should have kept the equipment.

CMI Corp. was one of the first ones to lease IBM; I saw them do some income funds when I would have held the equipment myself.

The investors in some of those earlier days are going to get some exceptional deals. It has gone full circle.

**CW:** It certainly seems that in this world, the residuals take on a greater importance.

**PONTIKES:** They have always been important, and that has always been the reason why this industry has been on the roller coaster, going back to the 1960s.

The more aggressive people are, the less money that's going to be made by the industry and the more casualties there will be.

**CW:** Do you see that happening now?

**PONTIKES:** With some people, certainly. Yet, on the other side, I see the industry maturing a great deal, with some very responsible companies emerging out of it. I also see some gunslingers out there, too.

**CW:** What do you expect to see from IBM? What moves would you expect them to make with IBM Credit Corp. [ICC]?

**PONTIKES:** I don't think the lease base question is really what's directing the company. Certainly they can use ICC to get some business, and that would make a lot of sense, but I don't see that happening.

I see IBM Credit continuing an aggressive stance on lease deals, and I can't figure out why they should do it; I think it's counterproductive to their corporate goals and growth.

**CW:** Are there any particular machines you're seeing that aggressiveness on more than others?

**PONTIKES:** At the present time, no. If anything, they have been less aggressive in the past couple of months. Then out of the blue, they become aggressive. I don't see any across-the-board program, but that's all subject to change in a moment's notice.

**CW:** Are you changing your product mix at all?

**PONTIKES:** Consciously, we have been ramping up for the past couple years to do more and more non-IBM equipment, telecom equipment, Digital Equipment Corp. equipment. We're doing communications equipment of all types, office environment stuff, networking, and we will continue to have a high emphasis on that. The IBM business will grow, but we feel in the other areas we will grow faster. I would like to say that within three years, our business will be 50% IBM and 50% others.

**CW:** That's really a drastic change from not too long ago.

**PONTIKES:** Actually, last year we probably did 20% non-IBM. With IBM Credit being very aggressive, you've got to do the deals that make economic sense.

ic sense.

**CW:** What is Comdisco trying to gain from its joint agreement with Sorbus, Inc.?

**PONTIKES:** We played around for a while with possibilities in maintenance. We had some of our own maintenance people where we have our data centers, and we started offering maintenance outside of our own center. We found some profitability, but we made a decision that we did not want to grow that way. But we felt that it was very valuable to our customer base.

So, Sorbus is a subsidiary of Bell Atlantic Enterprises; there is a lot of competence there, and they have some real growth plans which parallel some of ours. It's a good fit.

**CW:** These diversifications into

maintenance, disaster recovery and other services certainly seem to be a trend among the larger leasing companies.

**PONTIKES:** These aren't really diversifications. The business is to serve the customers. If you are providing financing and flexibility on IBM equipment or telecommunications equipment, the asset, the strong point in the franchise, is the customer. It's the same with services.

We don't make any of this stuff. People say we're a leasing company, but we were buying and selling before we were leasing, and we still do that. But there is just so much buy-sell activity that occurs, so you have to grow in other ways. I don't think IBM will ever say they don't want to sell anything anymore and they want to lease it, but if they do and that's all they do, we could have a problem.

## See the data.



### An IBM Color Display.

There are applications where it can really boost an operator's speed.

That's what The Travelers Companies found out. The Travelers, headquartered in Hartford, is one of America's largest financial services corporations.

In a real-world situation, The Travelers took the information-

intense task of insurance claims processing and ran their own test. They matched IBM monochrome displays against IBM 3179 Color Displays. Default colors were used so no software changes had to be made.

Color won hands down.

The individual operators in the test were amazed to see how data

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## COMPUTER INDUSTRY

# Boeing joins AT&T on \$4.5B contract bid

By Mitch Betts

WASHINGTON, D.C. — AT&T will team up with Boeing Computer Services Co. to bid for the Federal Telecommunications System (FTS) 2000 \$4.5 billion intercity telecommunications contract with the federal government, officials announced last week.

Boeing Computer Services, based in Vienna, Va., will add expertise in the areas of project management and systems integration to AT&T's networking capabilities, officials said. The AT&T-Boeing team-up, which was expected by analysts, is considered the leading contender for the huge contract.

AT&T and Boeing will be compet-

ing with the team of Martin Marietta Corp., MCI Communications Corp. and Northern Telecom, Inc. and an unannounced team led by U.S. Sprint Communications Co. [CW, Sept. 8].

## 'Critical opportunity'

Louis Golm, a vice-president at AT&T Federal Systems, called the AT&T-Boeing pair a "mature, experienced team" compared with its competitors. "AT&T has targeted this as a critical opportunity, and we intend to win it," he said.

The 10-year contract for the FTS 2000 will call for a state-of-the-art digital network to be used for voice, data and video transmissions, connecting 1.3 million federal employees

in about 3,500 locations throughout the U.S.

The U.S. General Services Administration plans to issue its final request for bids by the end of this year and award the contract about one year later [CW, Nov. 24].

Robert L. Dryden, president of Boeing Computer Services, said his firm decided in 1983 to start seeking government communications contracts.

Boeing recently obtained a 10-year contract with the National Aeronautics and Space Administration for a digital network and is developing a statewide voice/data network for the commonwealth of Pennsylvania, Dryden said.

# Can firms fight 'jungle king'?

From page 94

ing its technology patent to Hayes since 1983, and Bizcomp's original patent was upheld by the U.S. Patent Office two months ago. If the U.S. District Court were to decide in Bizcomp's favor, many modem vendors fear proliferation of what they see as unfair patents.

If modem companies truly want to make a statement, they could develop and patent their own technologies and create new standards. But good luck finding the R&D money, let alone finding the users willing to disregard an established standard for an unestablished one.

Or, they can drop out of the modem industry altogether and set out searching for another segment of the computer industry not dominated by industry leaders, standards, increasing competition and falling product prices. Bon voyage.

There are only two real options here: pay or protest. Most modem vendors will tell you that a 2% royalty fee is not going to dramatically affect the bottom line. In most cases, paying a royalty fee would be more economical than fighting one.

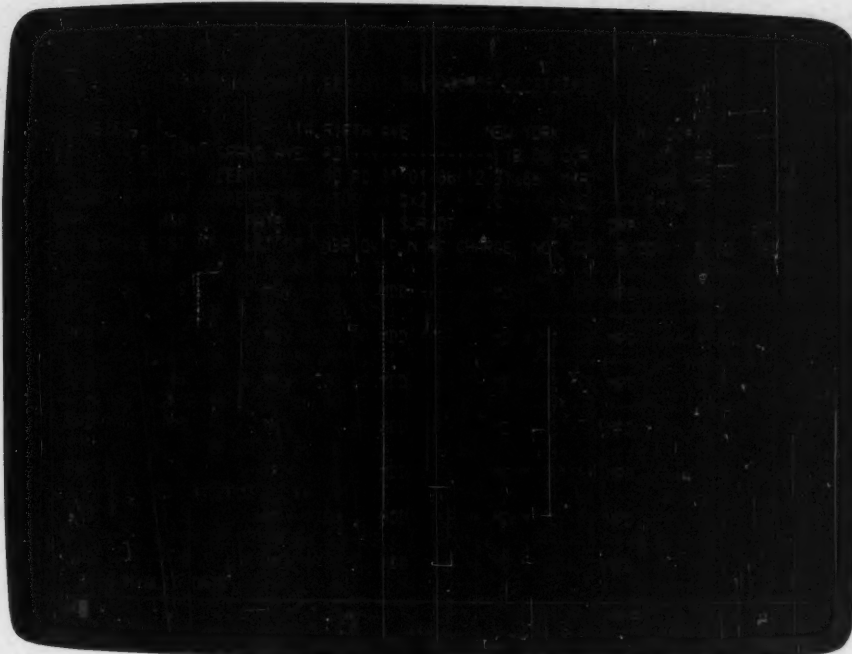
There has been talk in the industry of joining forces. One option discussed is a financial contribution to U.S. Robotics and Prometheus's long-standing lawsuit. A common cause, however, does not always make for a unified army. Competitors will have to put aside various differences, dogmas and paranoias in order to work together, and considering the characteristics of this industry, that's a rather tall requirement.

Although key modem players met twice in mid-November to discuss options, there have been no meetings since, and little progress has been made. As one insider says, "It's a case where most companies don't want to go to the expense and trouble of such an effort, but don't want to leave it to a competitor to do, either."

Modem companies will tell you the issue here is not the money involved; it's the principle of the thing. This sounds noble, and perhaps it is. But if you look closely, you'll find that at the heart of principle is ego.

By asking for royalties, Hayes has in effect stated a fact that everyone has known but does not like — Hayes is king of this jungle. This has bruised some egos, which in turn has stirred modem companies into thinking about action. What remains to be seen, however, is if the industry can successfully fight Hayes and Bizcomp through some rational and unified action or if the modem vendors will end up fighting no one else but themselves.

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popped out and how mistakes were easier to catch. The operators also became very possessive of their new machines.

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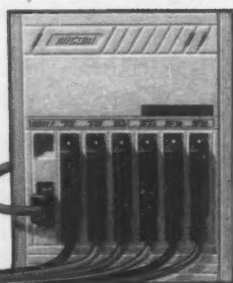
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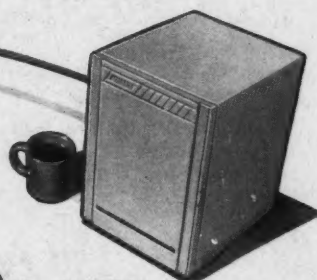


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## COMPUTER INDUSTRY

## IBM plans to distribute Migent tools

By Douglas Barney

INCLINE VILLAGE, Nev. — In a move that helps legitimize the firm's product offerings, Migent, Inc. last week announced that IBM will distribute Migent software through its sales channels.

"The IBM sales force can now offer Migent products to its accounts," said Carl M. Gritzmaker, president and chief executive officer of Migent. "They order software, and we supply it to them." Gritzmaker declined to comment on the potential value of the agreement, but said, "I think it is good for both companies."

The agreement also includes products under development by Migent, such as a data base engine currently being written by C. Wayne Ratliff, author of the original Dbase II from Ashton-Tate. Modules, which Migent refers to as "surfaces," will work with the engine and will include Ability, a \$99 integrated package, and Enrich, a data base and application generator.

As a result of the use of Enrich as a surface product for the data base engine, Migent will reduce the price of Enrich from \$395 to between \$150 and \$200, Gritzmaker said.

According to a source close to Migent, IBM is already including Ability in its bid for a 90,000-unit U.S. Air Force laptop contract.



William C. Norris, computer industry pioneer and chairman emeritus of Control Data Corp., talks with Gwen Bell, director of Boston's Computer Museum, at the dedication of a gallery in his honor held at the museum earlier this month.

The William C. Norris Gallery, a tribute to Norris's contributions to the computer industry, will house exhibits intended to educate the public about the role of computers in society.

A reception and dinner were held at the museum in honor of the gallery's opening.

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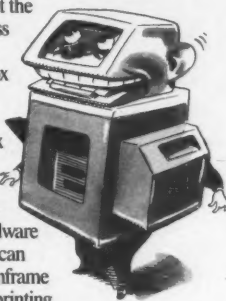
Facility. It enables IBM host computers using MVS/370 and MVS/XA operating systems to "speak" to Xerox printers—from the high-speed Xerox 9790 to the tabletop Xerox 4045 Laser CP—in any location.

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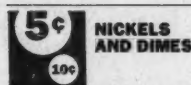
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MAI Basic Four, Inc. reported a loss of \$2.3 million, or 18 cents per share, which includes a \$7.8 million one-time charge for the early retirement of debt, for the fourth quarter ended Sept. 30. Revenue was \$75.7 million. In the year-earlier quarter, the company earned \$3.6 million, or 31 cents per share, on revenue of \$70.9 million.

For the year, MAI Basic Four reported earnings of \$9.1 million, or 52 cents per share, on sales of \$281 million, compared with \$5.5 million, or 40 cents per share, on \$168.5 million 1985 revenue.

Businessland, Inc. announced revenue for the first quarter of \$127.7 million, a 57% increase compared with the \$82.8 million reported a year ago. Profits were \$1 million, or 4 cents per share, compared with \$137,000, or 1 cent per share, in the like period a year ago.

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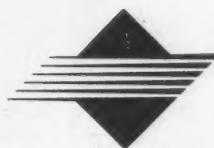
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**General Request for Proposal No. 1186**, due Tuesday, January 13, 1987 at 3:30 p.m. This is a general RFP to be used to select consulting services to address upcoming project needs in the areas of feasibility study, systems analysis and design, and systems development and implementation for the State of Mississippi through January 1988. Charge \$10.00.

**General Request for Proposal No. 1187**, due Tuesday, January 13, 1987 at 3:30 p.m. This is a general RFP to be used for the acquisition of Datapoint 6000/6000 series compatible equipment for the State of Mississippi through January 1988. Charge \$10.00.

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Detailed specifications may be obtained free of charge from the CDPA office or at the specified cost by submitting a written request accompanied by the appropriate payment. NOTE: Valid forms of payment are corporate check on a Mississippi bank, certified check or postal money order. NO CASH OR OUT-OF-STATE CHECKS. The CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

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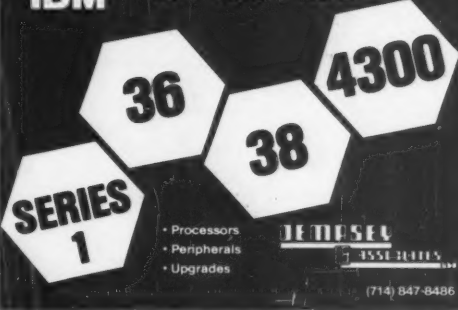
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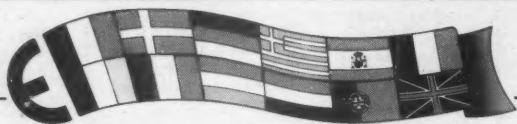
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NOP/ACF/VTAM/SNA	\$38-52k
SP/GENS/Asmblr	\$40-52k
SW Dsgn/Asmblr/MVS	\$45-62k
IMS Tune/Install	\$32-43k
VAX/VMS/Interns	\$35-47k

\* All positions are multiples \*

**PROGRAMMER/  
ANALYST(s)**

CICS/COBOL/Command	\$30-42k
CICS/Asmblr/Macro	\$30-43k
IDMS/ADSO/COBOL	\$30-45k
ADR/DATACOM/IDEAL	\$33-45k
IMS DBDC/COBOL	\$32-44k
ADABAS/NATURAL/COBOL	\$28-40k
VAX/VMS/DCL/Pascal	\$30-44k

\* All positions are multiples \*

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**AUBURN UNIVERSITY  
DIVISION OF UNIVERSITY COMPUTING  
Systems Programmer**

A position is available for a self-motivated professional with experience in IBM operating systems. The individual's primary responsibility will be the installation and maintenance of CICS, Cincom's SUPRA database system, and CICS and SUPRA associated software packages. Responsibilities will also include development of local systems software to support CICS.

The position reports to the Manager of Systems Programming. Auburn University currently operates on an IBM 3033 and an IBM 3033 under MVS/SP. The CICS system supports the library card catalog system as well as administrative information systems.

Qualifications: Bachelor's degree required. Master's degree preferred, and two or more years of systems programming experience or equivalent combination of education and experience. Knowledge of CICS installation, maintenance, and internals. ACF/VTAM and ACF/INCP knowledge a plus. Must be able to write and communicate clearly and effectively. Salary to \$30K. Competitive benefit package.

Auburn University is a state-supported land grant institution and the largest university in the state of Alabama. The institution is a comprehensive research oriented university with strong areas of concentration in agriculturally related services, natural sciences, and all fields of engineering. The university is located in a small urban community of 60,000 residents. Located within the area are excellent recreational and social opportunities.

Send a letter of application and current resume to:

Richard Burnett  
Associate Director for Technical Support  
Division of University Computing  
144 Parker Hall  
Auburn University, Alabama 36849-3602  
Application Deadline: January 5, 1987

Auburn University is an Equal Opportunity Affirmative Action Employer. Women and minorities are encouraged to apply.

**POSITION AVAILABLE: Consultant**

HOURS: 40 hours per week

SALARY: \$34,000.00 per year

**JOB DUTIES:** Responsible for doing systems and application programming at the direction of client management. Program analysis, design, coding, testing and implementation. Provide status reporting information to a client manager and to a C&A Technical manager. Technical skills include the COBOL and FORTRAN programming languages, ADABAS and IDMS database management systems, and ADSIO (Application Development Systems/Online), a "fourth generation language."

Machines Operated: IBM 3081, IBM 3033N, IBM 3033, IBM 4341, IBM 370, IBM PC/XT, IBM PC/AT.

**EDUCATION:** Must be a High School Graduate with 2 years of college in Systems Analysis.

**EXPERIENCE:** Must have 2 years experience or 2 years as Sr. Programmer/Analyst.

Send Resumes to:

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401 South State Street-3 South  
Chicago, Illinois 60606  
Attention: Robert S. Felton

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Our rapid expansion in the Southeast has created challenging assignments for **PROGRAMMER, ANALYSTS** or **DBA's** with a minimum of one year of **DB-2/SQ-1**, experience. We are also interested in talking to growth minded professionals with experience in IDMS, IMS or CICS.

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Find out more about career opportunities with CTG. CALL or RUSH your resume to:

COMPUTER TASK GROUP ● S.E. Regional Headquarters  
● 100 Colony Square ● Suite 2010 ● Dept. CW1215  
● Atlanta, GA 30351 ● (404) 881-8152 (COLLECT).

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**CTG**

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## POSITION ANNOUNCEMENTS

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# Turn Around

StorageTek is moving in exciting new directions, with new products, a new lean-and-mean attitude, and a new color of ink (black) for the financial reports. If you can imagine a company that combines the quality product orientation of a start-up with the R&D budget of a Fortune 500 company, that's the new StorageTek. Currently we have an opening for a:

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- providing resources for staff training, developing and administering budgets.

BA/BS or equivalent required, plus 16 years of experience in business and information system environments (including 3 years as second-level manager) involving the technical and non-technical aspects of business problem analysis, as well as the design and implementation of automated systems.

StorageTek offers excellent compensation and benefits. Send your resume to Phil McNichols, StorageTek, Department CW9, 2270 South 88th St., MD29, Louisville, Colorado 80028. We are an equal opportunity employer.

# StorageTek

## MARTIN MARIETTA DATA SYSTEMS

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Martin Marietta Data Systems, a major supplier of data processing services, is expanding our professional staff in Orlando, Florida. We have immediate career opportunities for the following:

### IMS PROGRAMMER ANALYSTS

2-5 years progressive experience in the design and programming of COBOL applications in a manufacturing environment under IMS DB/DC. Experience with TSO/SPF, PANVALET and DB2 is a plus.

### TELECOMMUNICATIONS SPECIALISTS

2+ years experience on either COMTEN 3690 or IBM 3725. Familiarity with various modems, multiplexors and BSC/SDLC protocols a must.

We offer highly competitive salaries and excellent benefits including: company paid health, dental and vision care insurance for you and your family, a unique performance sharing plan, and a tuition reimbursement program.

If you have the experience we seek and would like to explore career opportunities with a major division of a Fortune 100 corporation, send your resume and salary history in strictest confidence to: Martin Marietta Data Systems, P.O. Box 13385A, MP-357, Dept. CW1215, Orlando, Florida 32859-0385, or call 1-800-237-4574. We are an equal opportunity employer, m/f/h/v. U.S. citizenship is required.

**MARTIN MARIETTA**

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LAI is a computer consulting and software development firm with immediate openings for senior level computer scientists. Headquartered in the Chicago area, opportunities exist in Chicago, Columbus and other locations.

### Specific project work includes:

- UNIX® operating systems security, utilities & kernel enhancements.
- Real-time software design & development.
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Qualified candidates must have 2-5 years of experience in one or more of the preceding areas and a master's degree or equivalent in computer science.

We offer competitive salaries and a comprehensive benefit package. Send resume to:

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Westmont, IL 60559  
Attn: Staffing-CW  
or  
UUUC: .llhnp#llaidbaktjbs

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## S/38 PROGRAMMER/ ANALYST

Major Update NY mfr. plans staff additions in early 1987. Seeking systems S/38/RPG III programmer analyst w/min. 2 yrs. exp. Must be able to work independently. Pref. mfg. bkgd. To \$37,000.

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CCG is currently recruiting experienced DP professionals for selected and subcontract positions in a coastal southeastern location. Specific openings include:

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- PROGRAMMER/ANALYST - 3-10 years experience in design, analysis, and implementation of CICS COBOL, financial systems.

Call or write immediately for more information and immediate consideration.

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Columbia, SC 29204  
800/222-1273 or 803/738-1994  
ATTN: Diane Williams or Almae Murphy

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Please mail resume to: Annmarie Thompson-CW or CALL COLLECT 1-803-224-7917

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## Systems Programmer

Indiana Gas Company Incorporated has a career opportunity in the Information Systems Department. We are seeking an extensive individual with the following qualifications: Associates degree or equivalent, minimum two years related work experience in MVS operating systems, experience in software implementation and installation, exceptional analytical ability and problem solving skills. If you meet the above qualifications and are seeking employment with a company which offers competitive wages and good benefits send resume including salary requirements to S.L. Dean, Human Resources Representative, Indiana Gas Company Incorporated, 1930 North Meridian, Indianapolis, Indiana 46202. Interviews by appointment only. Equal Opportunity Employer.

## SYS/38 \$20 - \$50K

Programmers, Senior Programmers, Project Leaders, and Managers needed with RPG III experience. Positions available in the Northeast, Sunbelt, Midwest and Western locations. For more information call Mary Coleman at (301) 840-0460 or send resume to:

**J. Randall Associates**  
P.O. Box 1521  
Rockville, MD 20850  
Attn: Mary Friedman

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Seeking individuals with strong technical credentials, including the following:  
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MVS DB/DC Prog/Anal (1.5 yrs +)	25-32K
ADABAS/NATURAL Prog/Anal (2 yrs +)	27-38K
COBOL Prog/Anal (1.5 yrs +)	25-32K
S/38 Prog/Anal (0.5 yrs exp in COBOL)	24-31K
IBM 3600 Prog/Anal (0.5 yrs)	24-32K
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Bank Prog/Anal (0.5 yrs Bank Appl)	25-33K
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MVS Sys Prog (0.5 yrs)	24-30K
CICS Sys Prog (0.5 yrs)	27-40K
STAN/NOF Sys Prog (0.5 yrs)	25-40K
MVS or MVS Sys Prog (0.5 yrs)	25-38K
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**PROGRAMMER/ANALYST** - Develop, implement, test & enhance programs for scientific research organization. Confer w/personnel to ascertain specific requirements, study existing programs to determine effectiveness, develop new programs to meet projected needs. All programs & data done in the Turkish language for Turkish banks. 1 yr exp or 1 yr rel exp Engr. Bachel. - Comp. Sci. Must speak, read & write Turkish. Know: COBOL, BASIC, FORTRAN, DBASE, SAS, ASSEM. SCOM \$32,000/yr. HD Research Center, 150 White Plains Rd., Tarrytown, NY 10591. Send Resume.

Programmer/Analyst to provide DP support. Duties include development of Database systems using INGRES & SMARTSTAR (on VAX 8800/VMS system) and IMS (on AS/9000 TSO system), teach/train users, documentation, troubleshooting and ongoing maintenance.

Masters degree in Computer Science with 1 yr. experience as Programmer/Analyst or related occupation such as Analyst or Computer Science teacher/instructor required. Must have grad. school course work in Algebra, Systems, Data Structures, Programming Languages and Communication Systems Design. Also good interpersonal/communication skills.

Salary: \$26,000/year, 40 hrs./wk., 8 a.m. to 5 p.m. Apply at or send resume with graduate school transcript to Job Service of Iowa, 150 Des Moines Street, Des Moines, IA 50309. Refer to Job Order #1622916.

## PROGRAMMER ANALYST

Participate in design analysis and programming of EDP software for insurance company. Bachelor degree in math or computer science and 4 years experience on IBM mainframes running under OS/VS, MARK IV, systems design with SOM/70, TSO/ISPF, 4th generation report experience and IMS DB/DC. Salary \$36,000 per annum. Job in Los Angeles, resume to: EDP Recruitment (BM), P.O. Box 2101, Terminal Annex, Los Angeles, CA 90051.

## POSITION ANNOUNCEMENTS

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## Sr. Programmer/ Analyst

### Prime Information/PICK

You would be joining Standard Oil, one of the country's major petroleum marketers and a diversified (Fortune 25) energy company.

We're seeking a person capable of being the main support for a computerized accounting system written in Prime Information and backup support for PICK Systems on Honeywell Ultimate and IBM Series 1 computers.

As you apply analytical and quantitative skills that contribute to economic solutions to business problems, you would assume responsibility for:

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You're degreed, Computer Science or Math preferred, and have a minimum 2 years' PICK System programming, system analysis and strong user interface experience. Ideally your background includes Prime Information, Project Leader exposure, structured system analysis and other mini-computer and accounting systems.

We offer a highly competitive salary, excellent benefits and relocation assistance. Please send your resume and salary requirements in confidence to: Rick Taylor, Manager, Professional Staffing; **Standard Oil Company**; A unit of The Standard Oil Company; P.O. Box 94694; Cleveland, Ohio 44101-4694.

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### Data Processing

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We are hiring at a number of levels: Project Managers, Senior Systems Analysts, Systems Analysts, Programmer Analysts, and User Design Specialists are all required.

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You will be relocated to our headquarters in Jacksonville, Florida. Health Care/Claims experience in a large IBM mainframe environment required. IMS and CHAMPLUS experience desired. We're looking for innovative, creative, team spirited people.

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Requires 4+ years' experience or advanced degree in computer and information science involving at least several of the following: application of artificial intelligence, natural language processing, LISP, PROLOG, use of expert system shells, practical experience with UNIX, VMS, and knowledge of chemistry or chemical information handling. Also requires ability in developing future research thrusts in these areas, desire to work in a research environment and the ability to communicate well.

If you're looking for new challenges and a chance to build upon your professional experience - Chemical Abstracts Service may be the opportunity you've been waiting for. Please send your resume with salary requirements and references in confidence to:

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The successful applicant will be involved in designing and maintaining new and existing systems with supervisory responsibilities to train junior programmers and operators. We prefer 5 years RPG with at least 2 years IBM Systems 36 experience. Manufacturing, accounting or PC experience would be pluses.

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## NEW ENGLAND

## BOSTON

## LEAD SYSTEM ANALYST

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## BOSTON

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## BOSTON

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## HARTFORD

## MVS SOFTWARE SPEC.

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## HARTFORD

## PROG. ANALYSTS

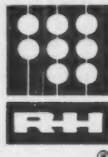
Hartford area oppty's. for PIA's & SA's w/CICS & IMS or IDMS exp. Two + yrs. exp. req'd. for oppty. to work in state-of-the-art IBM environ. Our client will provide data base training for qualified candidates w/2+ yrs. COBOL. Excellent oppty. for indiv's. seeking growth & advancement. Paid reloc. Salary to \$37,000.

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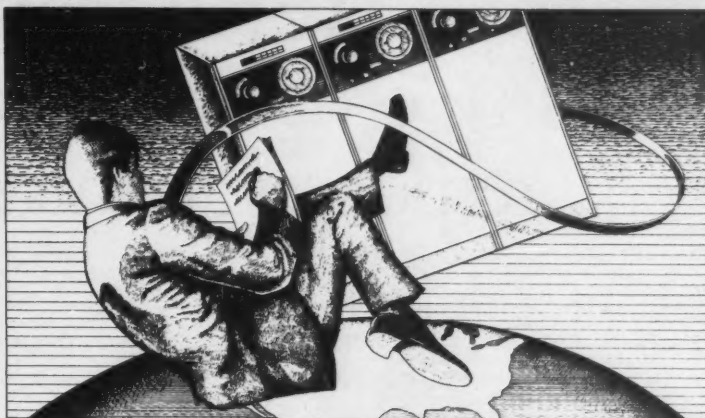
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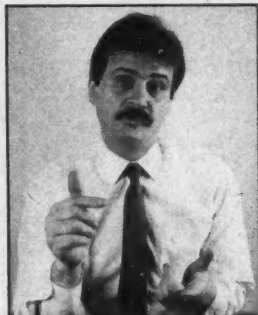
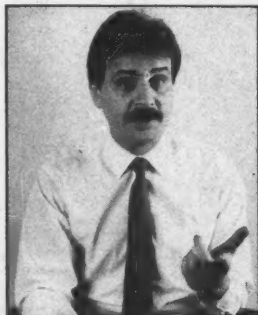
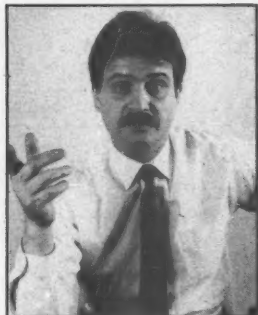
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saved for the entire month," he adds.

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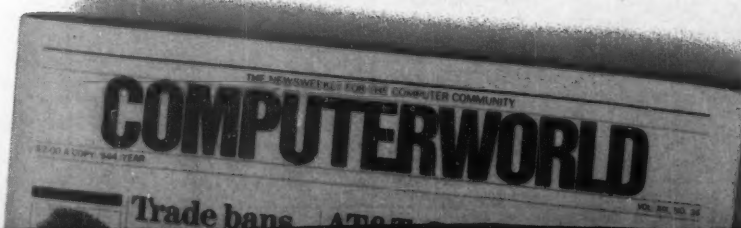
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## COMPUTER INDUSTRY

## No buyers for Intelligent

Lack of acceptable bids forces restructuring

By James A. Martin

NORCROSS, Ga. — Intelligent Systems Corp., which earlier this fall announced it was up for sale, apparently has not received the quality of offers it had hoped to have by the end of this year.

As a result, the company has restructured itself as a master limited partnership in order to reduce its liabilities under new tax laws regarding the transfer of assets. Analysts believe the firm is essentially bidding its time until a solid offer for all or part of the company is made.

Earlier this fall, Intelligent Systems announced it planned to sell any and all parts of the company in an effort to increase the company's stock market value [CW, Oct. 6]. The announcement, which analysts said was unusual but justified, had the desired impact on the company's stock, but has not yielded a sale.

Intelligent Systems hoped to liquidate at least some assets, such as its Princeton Graphic Systems, Inc., Datavue Corp. or Quadram Corp. subsidiaries, before the end of the year. Under existing tax law, a corporation that liquidates assets is not required to pay income taxes on the capital gain. The tax reform act, however, has repealed that break effective Jan. 1.

There have been unsubstantiated reports that Intelligent Systems was close to selling at least one subsidiary, Princeton Graphic Systems, to AST Research, Inc. in Irvine, Calif. But analysts believe the company has not received many quality offers and was forced to take measures to retain some tax benefits after Jan. 1.

Neither Intelligent Systems nor AST Research would comment on any acquisition discussions.

One problem that Intelligent Systems' sale bid may be facing is uncertainty about the future of the micro-

computer add-on market. Because of widespread discussion that IBM's anticipated microcomputer based on the Intel Corp. 80386 chip will be a closed box, many potential investors are wary of add-on product companies such as Quadram, according to Samuel E. Navarro, a technology analyst with Ladenburg, Thalmann & Co. in New York.

As a publicly traded master limited partnership, Intelligent Systems will have lower tax rates on capital gains than corporations by eliminating what amounts to double taxation of capital gains. "If Intelligent Systems as a corporation sells off one asset, the corporation has to pay taxes on those gains, and if they declared special dividends and passed them on to shareholders, the capital gains would be taxed twice," said David B. Guthrie, a technology analyst with Morgan Keegan, Inc. in Memphis. "A limited partnership pays no taxes, and everything flows through to the unit holders."

Guthrie said the plan "is a way of getting around the tax problems and buying some time so they can liquidate at their own pace, rather than being up against the wall with a Dec. 31 deadline."

Separately, Intelligent Systems said an agreement with a California-based investor group to buy the company's Asher Technologies division [CW, Sept. 22] has fallen through.

Alan B. Srochi, vice-president, secretary and treasurer of Intelligent Systems, said Asher Technologies' President and founder Wil Riner was to take that company private with the backing of the investor group, the identity of which Srochi would not reveal. Financing was not secured, however, and the deal subsequently faltered.

Srochi said Intelligent Systems had received a "great deal of interest" from prospective buyers. An announcement regarding a transfer of assets should be forthcoming soon, Srochi said, but he would not elaborate further.

## IBM stumbles to year's end, sees mid-1987 silver lining



### ACTIVE ISSUES

Kathy Porteus

In two weeks, IBM (IBM — 128) will close its books on a disappointing fiscal 1986. For Wall Street, which feeds off anticipation of the future, IBM's 1987 books are already under scrutiny by analysts.

Throughout 1986, disappointing news from IBM has repeatedly caused analysts to lower earnings estimates. On Dec. 31, 1985, the average 1986 earnings estimate for IBM was \$12.70 per share, according to Zacks Investment Research, Inc., which tracks estimates of securities analysts. By Sept. 30, that figure had fallen to \$9.98 per share. Currently, analysts estimate IBM will earn \$8.79 per share for this fiscal year.

IBM's 1986 stock performance tells a similar story. After topping 160 last February, the stock lost its luster; it currently sells in the 120s. Most analysts doubt IBM's stock will stray far from this range during the first half of 1987 because of the absence of encouraging news regarding the company's earnings.

Although most analysts remain bleak about IBM's first half, they say the company's second half of 1987 will draw investors back to the stock. According to Daniel Benton of Goldman, Sachs & Co., two reasons earnings should improve during IBM's second half are shipments of the firm's recently announced mid-range 9370 processor and the company's early retirement program.

"Essentially, I'm looking for IBM's next 'up' quarter to be its third-quarter 1987," Benton says. Key conditions for improvement in

IBM's first half of 1987 — namely, strong mainframe sales and/or an end to the industry slump — are not happening, he says.

Last month, Benton changed his purchase recommendation of IBM to neutral, citing his belief that the stock will trade between 115 and 135 for the next six to nine months.

Steve Milunovich, an analyst with First Boston Corp., also has a hold recommendation on IBM's stock. "This is a tough timing issue," Milunovich says, recognizing that many on Wall Street anticipate improvement in IBM's second half. If IBM announces positive news concerning its earnings, the stock will move very quickly, he says. "But I'm not convinced that such good news will come soon enough to make IBM's stock attractive in the meantime," Milunovich adds. He estimates that IBM will earn \$8.50 per share this year and \$10 per share in 1987.

"After such an accumulation of disappointments," says Rick Martin of Sanford C. Bernstein & Co., "there has to be a lot of good news before current investor perceptions change." News that would otherwise be interpreted as positive has not affected IBM's stock, he says. As examples, Martin cites IBM's "spectacular 9370 product announcement," continued stock repurchases and accumulation of cash during the past two quarters, which is indicative of a slowdown in spending.

Martin says IBM represents a very attractive purchase at this time. But he includes the caveat that buyers of the stock will probably not be happy with its performance during the next three quarters. "The key with IBM's stock," Martin says, "is it has a better long-term growth rate than the market as a whole."

Some on Wall Street have even begun eyeing IBM's 1988 fiscal year. "Everyone is focusing on IBM's 1987," says Fran Saldutti, director of research for Gartner Securities Corp. "But start looking ahead to 1988, and I believe it is possible to see another year of nongrowth."

*Porteus is president of Strand Research Associates, a Centerville, Mass.-based company that provides customized research services for financial and high-tech firms.*

## STC regroup plan approved

From page 94

spokesman said.

As the reorganization plan currently stands now, STC's creditors would receive full payment, or 100% on the dollar, for their claims, through a combination of cash and newly issued STC bonds and common stock.

Under terms of the plan, \$800 million in debt would be paid to various classes of creditors in the following way:

- Issuance of \$132 million in cash.
- The issuance of \$285 million in new 10-year notes paying an average of 13.5% interest.
- The issuance of \$190 million in common stock.

In a prepared statement, Ryal Popa, STC chairman and chief executive officer, said that more than 95% of the firm's creditors and security holders approved the reorganization plan.

## Unisys to close two facilities

From page 94

The Bristol plant, a former Sperry facility, manufactures computer systems, such as the 1170 and System 80, as well as peripherals and printed-circuit boards.

Burroughs' Eau Claire plant makes printed-circuit boards for commercial computers.

Approximately 1,570 workers are employed in Bristol, and 260 work in Eau Claire, Unisys said. Eau Claire will be closed in March, and Bristol will be shut in July, the firm added. Work done at the two facilities will be transferred to other Unisys plants.

The facility closings are part of a cost-reduction program disclosed two months ago that includes early retirement, attrition, selective hiring freezes and layoffs that will involve approximately 9,600 employees, or 8% of the firm's worldwide work force [CW, Oct. 13].

## Paul Newton named Relational head

By Eddy Goldberg

ALAMEDA, Calif. — Relational Technology, Inc., developer of the Ingres relational data base management system, last week named longtime Uccel Corp. executive Paul E. Newton president and chief operating officer. The move will become effective Jan. 1.

Newton comes to Relational Technology after an 18-year stint with Dallas-based systems software vendor Uccel, where he was senior vice-president and general manager of its systems software and financial software divisions.

Newton will take on responsibility for managing Relational Technology's operations, with each of the company's vice-presidents reporting to him.

Current company President Gary Morgenthaler, who will retain his position as chief executive officer, will become chairman of the board and a director at Relational Technology as well.

### Will oversee firm's performance

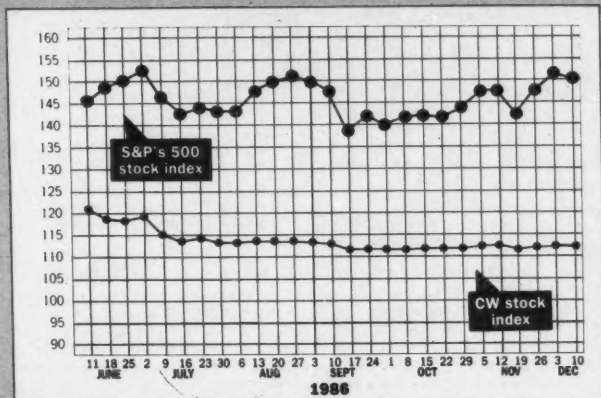
Morgenthaler, one of the company's founders, will be responsible for the company's overall performance, focusing on corporate strategy, key customer relationships, organizational staffing and structure and relations with the financial community.

Newton began his career at Uccel as a development engineer in 1968.

In 1976, he was named director of software marketing and was promoted to general manager of the systems software division in 1981.

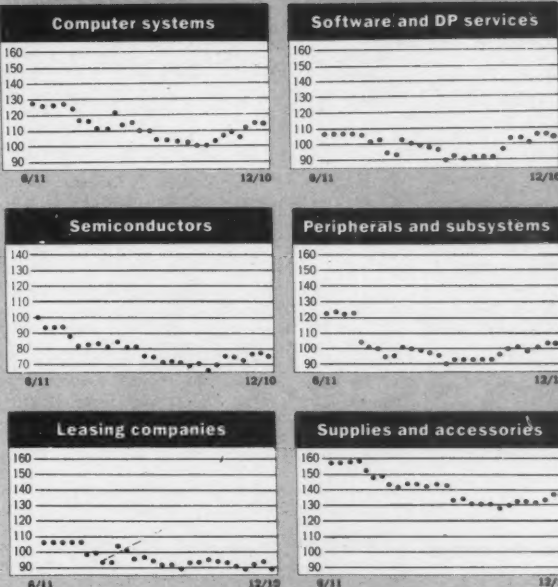
## COMPUTER INDUSTRY

## Computerworld stock trading index



All indexes reflect a historical base of 100 on Dec. 31, 1984, and trace stock market performance in relation to that base. The CW stock index represents the unweighted average performance of the six categories of computer industry stocks.

	12/3/86	12/10/86
Computer systems	115.3	114.3
Software and DP services	107.2	104.6
Peripherals and subsystems	103.6	102.2
Supplies and accessories	137.3	137.1
Semiconductors	76.9	75.2
Leasing companies	91.2	89.0
CW stock index	112.5	112.2
Standard and Poor's 500 stock index	151.8	150.1



## Computerworld stock trading index

CLOSING PRICES WEDNESDAY, DECEMBER 10, 1986

		PRICE						PRICE						PRICE						
		52-WEEK RANGE (1)	CLOSE DEC 10 1986	WEEK NET CHANGE	WEEK PCT CHANGE			52-WEEK RANGE (1)	CLOSE DEC 10 1986	WEEK NET CHANGE	WEEK PCT CHANGE			52-WEEK RANGE (1)	CLOSE DEC 10 1986	WEEK NET CHANGE	WEEK PCT CHANGE			
COMPUTER SYSTEMS																				
O	ALPHA MICROSYSTEMS	18	4	4.13	-0.5	-10.8	O	ADVANCED COMP TECH	7	4	4.00	+0.9	-17.9	A	AM INTL INC	9	5	6.75	0.1	-1.8
O	ALUCOS COMPUTER SYS	19	10	11.38	-0.5	-4.2	O	ADVANCED SYSTEMS	19	12	18.00	+0.4	+12.0	A	ANDERSON JACOBSON INC	33	11	1.50	+0.0	+20.0
O	AMDAHL CORP	25	13	21.35	+2.3	+12.8	N	AGS COMPUTERS INC	29	17	27.88	+0.4	-1.4	O	AST RESH INC	33	11	13.63	+0.8	+5.8
O	APOLLO COMPUTER INC	18	9	13.88	-0.6	-4.3	O	AMERICAN MGMT SYS INC	23	11	21.25	+0.0	+0.0	O	AUTOTROL CORP	10	6	5.88	-0.8	-9.6
O	ARPA COMPUTER INC	44	20	43.50	+0.8	+1.8	O	AMERICAN SOFTWARE INC	11	9	15.13	-1.3	-8.3	O	AVANT GARGUE COMPUTING	10	6	4.50	-0.3	-2.0
O	AT&T	28	21	27.25	-0.3	-0.9	N	ANAPAC INC	7	3	4.00	-0.1	-3.0	O	BANCITE INC	13	6	9.50	+0.0	+0.0
O	C P T CORP	7	3	3.00	-0.3	-7.7	O	ANALYSTS INTL CORP	4	9	9.25	+0.0	+0.0	O	BOLT BERANEK & NEWMAN	48	34	42.53	-1.4	-3.1
O	COMPAQ COMPUTER CORP	21	12	20.75	+0.4	+1.8	O	ASITON TECH	4	18	41.25	-0.5	-1.2	O	CETEC CORP	9	5	5.25	-0.3	-2.0
A	COMPUTER CONSOLES INC	12	6	8.50	-0.5	-5.6	O	ASK COMPUTER SYS INC	15	9	12.50	+0.6	+3.5	A	CIGNOTRINICS CORP	6	2	2.25	-0.3	-10.0
O	CONCURRENT COMP CORP	28	15	16.75	+1.0	+6.3	O	ASTRADYNE COMP INC	3	4	1.00	-0.3	-16.2	N	COMPUGRAPHIC CORP	19	10	1.88	+0.0	+0.0
O	CONTROL DATA CORP	28	19	26.63	+0.5	+1.9	O	AUTOMATIC DATA PROC	38	28	35.50	-0.4	-1.1	O	COMPUTERVISION CORP	19	10	14.25	+0.0	+0.0
O	CONVERGENT TECH	14	4	6.13	-0.4	-5.8	O	BOOLE & BARRAGE INC	7	4	5.75	+0.0	+0.0	O	CONRAC CORP	12	18	13.25	-0.4	-2.8
O	CRAY RESH INC	100	57	82.00	+1.3	+3.0	O	COMPUTER ASSOC INTL INC	25	14	22.75	+0.0	+0.0	O	DATACLOUD PRODUCTS CORP	12	18	12.38	-0.3	-2.0
O	DASY SYS INC	8	8	8.13	-0.6	-8.4	O	COMPUTER HORIZONS CORP	25	14	10.50	+0.0	+0.0	O	DATARAM CORP	18	7	7.00	+0.0	+0.0
N	DATA GEN CORP	50	25	33.00	+0.4	+1.1	O	COMPUTER NETWORK TECH	10	3	5.06	+0.1	+2.5	O	DATA SWITCH CORP	9	5	6.00	-0.4	-5.9
N	DATAPoint CORP	109	64	108.75	+0.0	+0.0	O	COMPUTER SCI CORP	20	10	28.50	-0.3	-1.0	O	DATAVIDEO CORP	10	6	4.63	-0.3	-2.0
O	DEC CORP	109	64	108.75	+1.4	+1.3	O	COMPUTER S&S GROUP INC	19	11	12.25	+0.0	+0.0	O	DECISION INFO CORP	15	8	6.88	-0.6	-6.6
N	FLOATING POINT SYS INC	46	11	11.38	-0.9	-7.1	O	COMPUTONE SYS INC	6	0	0.25	-0.1	-20.1	O	EMC CORP	3	3	6.38	+0.0	+0.0
N	GOLD INC	31	15	11.75	+0.1	+0.8	O	CONSUMERS INC	10	5	11.50	+0.2	+1.8	O	ENTEL CORP	21	15	19.00	+0.0	+0.0
N	HARRIS CORP	37	26	30.88	-0.9	-2.8	N	CULLINNET SOFTWARE INC	20	6	7.75	-0.3	-3.1	O	EVANS & SUTHERLAND	29	18	27.00	+0.3	+0.9
N	HEWLETT PACKARD CO	50	35	43.88	-0.9	-2.0	O	CYCARRE SYS INC	17	8	8.60	-0.4	-4.5	N	FLOATING POINT SYS INC	46	11	11.38	-0.9	-7.1
N	HONEYWELL	96	49	96.99	-0.5	-0.5	O	DIAGNOSTIC SYS INC	10	5	10.50	-0.1	-1.6	O	GENERAL AT&T TECHNOLOGIES	50	25	7.00	+0.0	+0.0
N	IBM	162	119	128.00	-0.6	-0.5	N	GENERAL ELEC CO	89	67	86.63	-1.9	-2.1	N	GENERAL DATACOM INC	15	8	8.13	-0.4	-4.4
O	IPL SYS INC	4	2	2.38	+0.0	+0.0	N	GENERAL MITSUB CORP	50	26	27.50	-0.8	-2.7	N	HAZELTINE CORP	17	13	28.75	+0.0	+0.0
O	ITT CORP	60	34	60.13	+1.1	+1.2	N	HOGAN SYS INC	12	5	11.50	+0.5	+4.3	O	INTEC CORP	18	13	8.38	-1.7	-8.2
N	M A COM INC	19	12	12.88	-0.1	-1.0	O	INFORMATION SCIENCES INC	1	1	1.25	-0.5	-28.6	O	INFORMATION INTL INC	13	13	13.75	-0.3	-1.8
N	MATSUSHITA ELEC INDO LTD	130	60	128.00	+4.6	+3.7	O	INFOTRON SYS CORP	19	8	8.00	-2.8	-25.6	O	INTERLEAF INC	15	8	10.75	+0.5	+4.9
O	MENTOR GRAPHICS CORP	21	11	8.88	-0.1	-1.3	O	IRANE INC	14	8	14.63	-0.4	-2.8	O	MEDAGATA CORP	5	2	2.81	-0.2	-6.2
N	NBI INC	14	8	9.88	-0.1	-6.3	N	LOGICON INC	43	22	22.25	-1.3	-5.5	O	MEDATRON CORP	15	11	11.38	+0.0	+0.0
N	NOR CORP	57	38	48.25	+0.5	+1.0	O	LOTUS DEV CORP	52	25	52.75	+0.5	+0.5	N	NASHUA CORP	28	14	22.63	-1.5	-8.2
N	ORACLE CORP	21	11	21.13	-0.2	-1.3	O	MANAGEMENT SCI AMER	16	10	13.63	+0.0	+0.0	O	NETWORK SYS CORP	25	10	12.25	-1.8	-12.5
O	STRATUS COMPUTER INC	26	17	22.00	+0.3	+1.1	O	MCI COMM CORP	13	6	7.38	+0.3	+3.5	O	NETWORK SYSTEMS CORP	35	10	38.50	+0.0	+0.0
O	SYMBIOS INC	26	17	22.00	+0.3	+1.1	O	MICRO COMM CORP	13	6	7.38	+0.3	+3.5	N	NORTHERN TELECOM LTD	38	25	11.88	-0.3	-0.8
O	TANDEN COMPUTERS INC	40	20	35.83	-2.5	-6.5	O	MICRON	16	10	15.13	-0.5	-3.3	O	NOVELL INC	38	25	25.75	+0.0	+0.0
N	TANDY CORP	45	31	42.50	-0.5	-1.2	O	MICRO PRD INTL CORP	4	2	2.38	-0.1	-5.0	O	NOVELL INC	38	25	25.75	+0.0	+0.0
N	TEXAS INSTRS INC	148	102	148.00	+0.1	+0.1	O	MICROSOFT CORP	51	26	48.63	+0.0	+0.0	O	NOVELL INC	38	25	25.75	+0.0	+0.0
N	ULTIMATE CORP	35	13	19.75	+0.0	+0.0	O	NATIONAL DATA CORP	16	10	16.63	-0.6	-3.6	O	NOVELL INC	38	25	25.75	+0.0	+0.0
N	UNISYS	67	58	82.50	-3.3	-3.8	O	ON LINE SOFTWARE INT	16	8	14.25	+0.3	+1.8	O	NOVELL INC	38	25	25.75	+0.0	+0.0
N	UNISYS LABS INC - B	23	13	23.88	-0.1	-0.4	O	ORACLE SYS INC	20	13	20.25	+0.8	+3.8	O	NOVELL INC	38	25	25.75	+0.0	+0.0
N	UNISYS LABS INC - C	23	11	13.00	+0.0	+0.0	O	PARADOX SYS INC	16	8	14.25	+0.3	+1.8	O	NOVELL INC	38	25	25.75	+0.0	+0.0
N	XEROX CORP	72	49	61.63	+0.6	+1.0	O	POLICY MGMT SYS CORP	25	15	23.00	-0.1	-0.4	O	NOVELL INC	38	25	25.75	+0.0	+0.0
SUPPLIES & ACCESSORIES																				
N	AMER BUSINESS PRODS	37	23	24.50	+0.5	+2.1	O	PROGRAMMING & SYS INC	11	8	8.00	-0.1	-1.4	O	OMC INC	16	9	13.50	-1.5	-10.0
N	BARRY WRIGHT INC	25	14	15.50	-0.1	-0.6	O	REYNOLDS & REYNOLDS CO	42	3	42.38	+0.5	+1.2	O	OMC INC	16	9	13.50	-1.5	-10.0
A	DUPLEX PRODS INC	23	19	16.38	-0.5	-2.8	O	SCIENTIFIC COMPUTERS INC	6	4	5.00	+0.4	+8.1	O	OMC INC	16	9	13.50	-1.5	-10.0
A	ENNIS BUSINESS FORMS INC	28	21	26.63	-0.1	-0.5	O	SEI CORP	28	15	19.00	-0.3	-1.7	O	OMC INC	16	9	13.50	-1.5	-10.0
N	3M CO	117	86	116.00	+1.9	+1.6	O	SHARED MED SYS CORP	31	17	31.00	+0.0	+0.0	O	OMC INC	16	9	13.50	-1.5	-10.0
N	STANDARD REGISTER CO	50	32	38.75	-0.8	-2.0	O	SOFTWARE AG SYSTEMS INC	22	12	11.75	-0.1	-1.1	O	OMC INC	16	9	13.50	-1.5	-10.0
N	WALLACE COMPUTER SVCS	50	37	42.50	+0.8	+1.8	O	SOFTWARE PLUS CORP	28	11	21.00	+0.3	+1.3	O	OMC INC	16	9	13.50	-1.5	-10.0
SEMICONDUCTORS																				
N	ADVANCED MICRO DEV	34	13	15.00	-1.1	-7.0	O	STERLING SURFACE INC	21	9	12.63	-0.4	-2.9	A	T&B CORP	7	2	3.88	+0.3	+3.3
N	ANALOG DEVICES INC	25	14	15.88	-0.1	-0.8	O	SUNGUARD DATA SYSTEMS	16	10	14.00	+0.3	+1.8	A	TAB PRODS CO	11	12	12.38	+0.3	+2.1
O	ANALOGIC CORP	16	10	11.38	-0.1	-1.1	O	TELECOM CORP	18	11	16.50	-0.1	-0.8	O	TANDEM CORP	7	3	3.38	-0.5	-12.9
N	APPLIED MAGNETICS CORP	20	13	15.63	-0.3	-1.9	O	UNISYS CORP	32	18	30.00	+0.5	+1.7	O	TELEVISION SYS INC	70	55	68.13	-1.4	-20.0
O	AWANTEK INC	23	14	14.63	-0.3	-1.7	O	VM SOFTWARE INC	32	18	30.00	+0.4	+1.7	O	TELEX CORP	70	55	68.13	-1.4	-20.0
O	AXCIS CORP	7	3	7.00	-0.9	-6.9														
O	INTEL CORP	32	16	22.25	-0.8	-3.3														
O	MICRO MASK INC	7	2	2.68	+0.1	+4.5														
O	MOTOROLA CORP	80	34	80.00	+0.5	+1.6														
N	NATIONAL SEMICONDUCTOR	18	8	11.13	-0.4	-3.3														
N	TERADYNE INC	30	16	17.00	+0.0	+0.0														
PERIPHERALS & SUBSYSTEMS																				
N	AMINTL INC	9	5	6.75	0.1	-1.8	N	COMDISCO INC	25	12	17.88	-0.9	-4.7	N	CONTINENTAL INFO SYS	12	6	8.50	-0.3	-2.5
N	ANDERSON JACOBSON INC	33	11	1.50	+0.0	+20.0	N	CONTRAST GROUP INC	21	11	21.00	+0.8	+3.8	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5
N	AST RESH INC	33	11	13.63	+0.8	+5.8	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	PHOENIX AMERN INC	6	3	3.75	+0.1	-0.2
N	AUTOTROL CORP	10	6	5.88	-0.8	-9.6	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	AVANT GARGUE COMPUTING	10	6	4.50	-0.3	-2.0	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	BANCITE INC	13	6	9.50	+0.0	+0.0	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	BOLT BERANEK & NEWMAN	48	34	42.53	-1.4	-3.1	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	CETEC CORP	9	5	5.25	-0.3	-2.0	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	CIGNOTRINICS CORP	6	2	2.25	-0.3	-10.0	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	COMPUGRAPHIC CORP	19	10	1.88	+0.0	+0.0	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	COMPUTERVISION CORP	19	10	14.25	+0.0	+0.0	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	CONRAC CORP	12	18	13.25	-0.4	-2.8	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	DATACLOUD PRODUCTS CORP	12	18	12.38	-0.3	-2.0	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	DATARAM CORP	18	7	7.00	+0.0	+0.0	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	DATA SWITCH CORP	9	5	6.00	-0.4	-5.9	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3	-2.5	N	SELECTRON INC	12	6	8.50	-0.3	-2.5
N	DATAVIDEO CORP	10	6	4.63	-0.3	-2.0	N	DATA MANAGEMENT CORP	12	6	8.50	-0.3								

# COMPUTER INDUSTRY

## INSIDE

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## INSTANT ANALYSIS

"The new expression in the industry is FUDGE: Fear, Uncertainty, Doubt and Great Expectations."

— John F. Smith, vice-president of engineering and manufacturing, Digital Equipment Corp., on IBM

## STC regroup plan approved

### But tax liability dispute with IRS remains unsolved

By Alan Alper

DENVER — Storage Technology Corp.'s (STC) creditors and security holders last week overwhelmingly approved the company's reorganization plan, putting the firm one step closer to emerging from Chapter 11 protection.

There is, however, one major obstacle to STC's deliverance from Federal Bankruptcy Code protection. The Louisville, Colo., firm remains gripped in a tax liability dispute with the Internal Revenue Service, which claims it owes the government \$640 million in back taxes, interest and penalties.

Based on a federal bankruptcy judge's recent ruling, STC calculates its tax bill to be \$25.2 million. If STC is found to owe the IRS more than \$55 million, however, the reorganization plan will be declared invalid.

In addition, the firm said it will reduce its net operating loss carryovers by between \$130 million and \$150 million, leaving approximately \$250 million of net op-

erating loss carryovers for future use.

The IRS and the Department of Justice are expected to appeal the ruling and ask that the case be heard by a federal court, STC said.

The IRS could not be reached for comment at press time.

#### Emergence expected

Even with the continuing tax liability dispute, STC still expects to emerge from Chapter 11 during the first half of next year.

"We expect to have all our documents filed and certified with the bankruptcy court within the next 30 to 60 days," a company spokesman said.

"That would allow us to have the plan confirmed in the first quarter of next year and emerge from Chapter 11 in the second quarter of next year," he continued.

The spokesman added that based on the judge's ruling, which was highly critical of IRS practices, STC expected the government's appeal to concern procedural rather than monetary issues.

"We are still leaving the door open to negotiate with the Justice Department and IRS on final issues not appealable," the

See STC page 92

## Unisys to close plants as part of cost-reduction effort

By Alan Alper

DETROIT — As part of an earlier stated goal to reduce worldwide employment by almost 10,000, Unisys Corp. is closing two manufacturing facilities, which will result in the elimination of 1,830 jobs by next July.

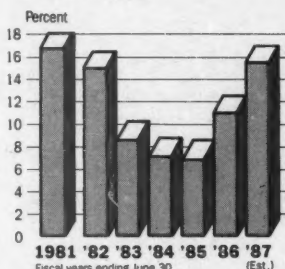
The decision to close manufacturing plants in Bristol, Tenn., and Eau Claire, Wis., comes as Unisys, the company formed as a result of Burroughs Corp.'s acquisition of Sperry Corp., studies ways to streamline operations and reduce redundant functions.

See UNISYS page 92

## DATA VIEW

### DEC rebound

Digital Equipment Corp.'s annual operating margins



Information provided by E. F. Hutton & Co.



INDUSTRY INSIGHT  
James A. Martin

## Can firms fight 'jungle king'?

In the jungle that is the microcomputer modem industry, Hayes Microcomputer Products, Inc. of Norcross, Ga., is the undisputed king. Recently, this lion let out a roar, and the rest of the jungle is wondering what to do about it.

As the industry leader, Hayes had 28.5% of the market share for 1,200 bit/sec. modems in 1985 and 26.1% of the 2,400 bit/sec. segment, according to Framingham, Mass.-based International Data Corp. (IDC). Although no IDC study was done on this subject in 1986, those figures were expected to remain fairly stable.

In October 1985, Hayes received a U.S. patent for a technical code called "improved escape sequence with guard time," which most Hayes and Hayes-compatible modems feature. Hayes puffed its chest and asked modem vendors selling compatible products to pay a 2% royalty fee based on the net selling price for each unit sold.

Hayes' competitors are wondering at this point how, and if, they can fight that royalty. Many are looking to the outcome of a complex legal entanglement involving Bizcomp Corp., U.S. Robotics, Inc., Promethea Products, Inc. and, most recently, Hayes.

In brief, Bizcomp received a patent on its autodialing technology in 1983. The validity of that patent was legally challenged by competitors, who claimed such technology existed long before the patent. The case is not to be heard until mid-1987. Adding another dimension is the fact that Bizcomp has been licens-

See CAN page 73

Martin is Computerworld's Southeast correspondent.

## CONFERENCE NOTEBOOK

### Ashton-Tate, Lotus display opposing strategies for Mac

By Clinton Wilder

BOSTON — The chief executives of Lotus Development Corp. and Ashton-Tate reaffirmed their diametrically opposed strategies for the Apple Computer, Inc. Macintosh at the First Boston Corp. High Technology Conference last week.

During a week in which Ashton-Tate disclosed a delay in the release of its data base software for the Macintosh (see story page 4), Ashton-Tate President and Chief Executive Officer Edward Esber promised a continuing commitment to future products for the Apple micro. "We do believe in the Macintosh viability," Esber told the con-

ference crowd of institutional investors and portfolio managers.

Although Ashton-Tate and Microsoft Corp. share that commitment, Lotus will focus on the IBM Personal Computer and its successors, said President and CEO Jim Manzi. Lotus has been plagued by dismal sales of its Macintosh product, Jazz, after spending millions on development and advertising.

"Our current thinking is that the opportunities are better elsewhere," Manzi said. "Management has decided that the risk of not betting on the Macintosh architecture is a risk worth bearing."

Manzi outlined several of Lotus's

business strategies, including moving aggressively in at least one more major vertical market, exploiting electronic mail and developing more fee-based services.

Esber said Ashton-Tate is eyeing acquisitions to move into mainframe and minicomputer data base software markets.

Tandem Computers, Inc. will target NCR Corp. in the point-of-sale market with a new low-end transaction processing system next year, said CEO and President James G. Treybig. Other 1987 product announcements will include application generator software for the on-

line transaction processing environment and a distributed Structured Query Language system.

The IBM 9370 series is not cannibalizing sales of the 4300 series because the latter is simply not selling well, said Stephen Schwartz, president of IBM's Systems Products Division. "We haven't been selling many 4361s," he said. "We haven't had many orders in that area except for 4381s."

Schwartz said two-thirds of the 9370 orders so far have come from large volume accounts, including United Airlines [CW, Dec. 8] and Ford Motor Co.



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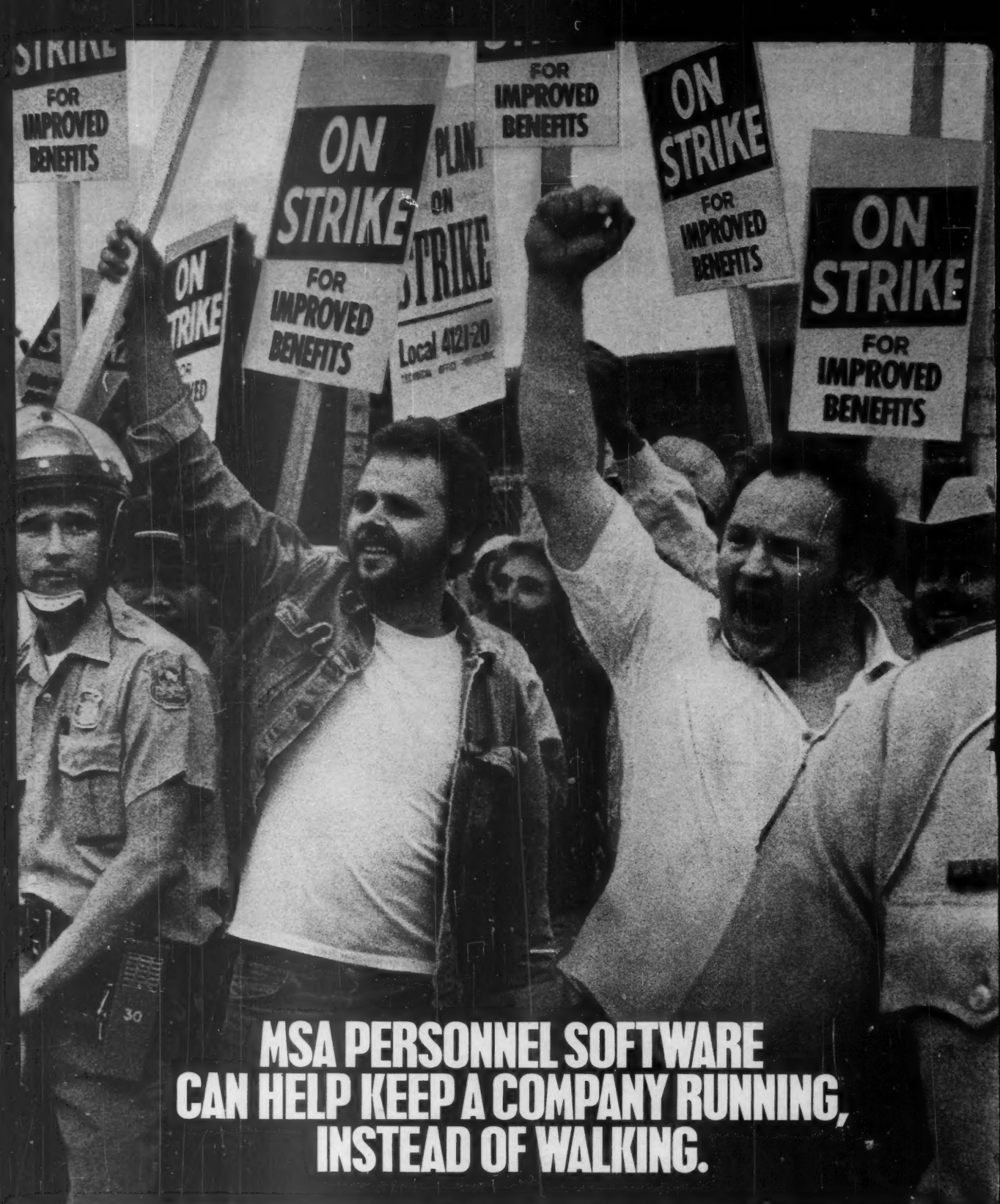
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